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THE CAUSAL FALLACY

By E. Graham Howe, M.B. Lond., D.P.M.
HONORARY PHYSICIAN TO THE INSTITUTE OF MEDICAL PSYCHOLOGY

The Nature of a Hypothesis

The purpose of this paper is to criticise what is perhaps the most fundamental hypothesis in both medicine and psychology—namely, that of "cause and effect." It may seem to be beyond doubt that every effect must have a cause, and it is upon this assumption that we seek to cure a disease by the tracing of it to its cause, whether in the field of physical medicine or in that of the disorders of mind. It is suggested, however, that the hypothesis of cause and effect is not always valid in the way in which it is used, and that in spite of its undoubted usefulness to scientific progress in the past, it has by our wrong use of it involved us in a series of corrective fallacies, also doing duty as hypotheses, which have obscured the true progress both of the science and the art of medicine.

An excellent example of the dangers of a hypothesis may be quoted from the words of Sir Arthur Eddington: "We have found a strange footprint on the shores of the unknown. We have devised profound theories to account for its origin. At last we have succeeded in reconstructing the creature that made the footprint. And, lo! it is our own." Thus does our understanding often fail to see the ground upon which it has made its stand. The hypothesis does double duty both as cause and as effect, disclosing itself in endless repetition through a series of events which to the uninitiated appears to be something very like proof. Here is a case in which "cause and effect" certainly does hold good. But it is a poor argument for the axiom itself, if it is only to be true when the hypothesis is a false one.

Medicine is both a science and an art, and for either of these metaphysics may seem an unfamiliar medium. There is one point, however, which every science or art must have in common with metaphysics, and that is its dependence upon some fundamental concept or elementary working hypothesis. The imposing structure of the completed edifice sometimes hides from us the fact that there must be a foundation somewhere. It is rather shaking to our scientific certainty when we realise that the nature of that foundation is nothing more secure than a hypothesis. We are not taught much about these little things and we often fail to recognise one when we see one, but the fact remains that they are of the utmost importance in framing the unity of our architectural system.

Nothing is good in itself, and even a working hypothesis may become a dangerous tool, having a disastrous effect all unrecognised upon the stability of the structure which is based upon it. The danger of a hypothesis is that it may be taken as an axiomatic statement which is therefore assumed to require no proof. But this is not in fact the case and science has found it necessary in recent years to revise many of its axioms and criticise them all. As our observations extend further, even our best hypotheses may prove themselves to be wrong, and if we keep them, all deductions will be wrong that depend upon them. There is no great difficulty in checking up the error of one hypothesis by inventing others as required to fill the gaps which the original hypothesis fails to explain. This is a very general scientific tendency and accounts for the large number of hypotheses which pass as scientific facts.

A hypothesis is never at its best when used as part of our therapeutic armamentarium, but it is an essential weapon of research. It is hoped that this paper may be of some clinical interest in preventing bad treatment which seems right because it is the legitimate offspring of a bad parental hypothesis. But, primarily, it is written in order that research may not be crippled by any false assumptions at its hidden base.

The Causal Fallacy

It may seem to be an astounding statement to say that it is impossible to prove any other example than that quoted above as a true case of cause and effect. To take a very simple illustration: I strike a match upon a box and discover a consequent flame. Is not the cause the striking and the effect the flame? The patient suffers from pneumonia; is not the cause of the disease the pneumococcus and the cause of the recovery the physician's skill? Or the patient may suffer from pains in the abdomen; is not the cause the acute appendix, and is not the cure caused by its surgical removal? For the judge, vaginismus is the cause of sexual incompetence; and for the coroner a distressing love affair is the cause of suicide. In diseases of the mind the patient may present symptoms of anxiety, and we are told that the cause is to be sought in the earlier experiences of childhood. It is often stated that the cause of "nerves" is the increased stress of existence under modern conditions. Thus when the cause has been found, both science and reason have been satisfied.

However, not one of these examples is truly a case of cause and effect. Not only is the effect produced in each case by the interaction of at least two antecedent events, but each of those antecedent events is produced by the interaction of another two. If we are to be accurate we must then recognise not "a cause" but an endless multiplicity of causation, which is extremely confusing. There never is, in fact, "a cause" but always "a relationship," and the advantages derived from our knowledge of bacteriology have to some extent been outweighed and lost by the way in which it has been conceded an importance out of balance and beyond its due, by tending to ignore the vital factor of variations in the patients' immunity, which is the other aspect of the relationship. It is to-day generally agreed in theory, although not always recognised in practice, that disease is essentially an interaction between seed and soil, in both of which there is a convergence of a sequence of related events, from the association of which the effect is developed.

It is particularly in psychological medicine that the causal fallacy has been responsible for most damage. The patient with anxiety suffers from a symptom, the cause of which is sought in a past event: when the cause is located and realised by the patient we have arrived hypothetically at a cure. The pursuit of the cause by the analytic method is, however, liable to be unduly prolonged, and it has so far been sought diligently enough through the errors of parental upbringing, back into the distant mists of racial uncertainty. The physician who is called in to treat the case of "nerves" will employ his best scientific technique, and will, of course, recognise that it is always wrong to treat symptoms, and it is his duty in this case as always to find the "cause." It seems to him as if the cause is business worry or domestic difficulties, or perhaps septic teeth. Failing to obtain a recovery through his attempts at eradication of any of these hypothetical

"causes" he will go deeper, or perhaps refer the case to another seeker after "causes" who will find childhood's unhappiness, jealousies between brothers and sisters, a scolding nurse, a tyrannous father, or a spoiling mother. However, there is no need whatever to stop at this point, for any logical and sufficiently persistent search for the "cause" will recognise the importance of the breast as being the causal centre of all subsequent disasters, in that it was administered, whether injudiciously or not, by the mother. And why stop here, for there is the awful event of the birth trauma itself, and surely at last we have found the first cause! But no, there is no end to this game and no rest for the ætiologist; the pursuit must be carried still further. The cause is in the genes or in the racial unconscious, but at any rate by now it is somewhere at the back of beyond.

It is rather curious that the search for the "first cause" should for so long have been regarded as scientific orthodoxy, when philosophy had already recognised the principle of the recurring decimal in what it described as the "infinite regress," and Roman Catholicism had regarded it as a valid proof of the existence of God. There is no answer to the question, "Which came first, the chicken or the egg?" and there is no answer to the question of "What is the cause?" except the somewhat unsatisfactory one, "Whatever may have been your original hypothesis." But that is in fact the only point at which finality is reached in any thorough examination of the causal sequence.

To deal with one or two examples in psychology, the feeling of inferiority is said to cause the defensive reaction of over-compensation through the assumption of omnipotence. Here surely is a mechanical statement of cause and effect? But if so it is rather disconcerting to recognise that the fact is reversible, because the assumption of omnipotence also produces an intolerable inferiority when it fails to get what it wants. The mechanism of the castration complex has also the same uncertainty, for did my father's threatening attitude suggest that he wanted to punish me, or did the nature of my wishes tend to correct themselves by suggesting that I should punish myself? There is no end and no answer to these questions, because they represent the reversible aspects of a situation not of "cause and effect," but of balance.

Perhaps the most familiar experiment of our physiological days was that of the muscle-nerve preparation, in which electrodes were placed upon a dissected nerve in a saline solution and we saw a resultant contraction in the muscle. This was surely a demonstration of the infallibility of cause and effect, stimulus and response? The interference of an external cause produced an internal effect upon the organ stimulated and certainly appeared to be its sine qua non. But this depends upon the doubtful assumption that the external cause operates upon a medium which has no power to act from within, but is instead entirely dependent upon the interference from the external cause. It assumes the observed effect to be a phenomenon of excitability but not of responsiveness. This is the familiar trigger and cartridge mechanism of the physiological hypothesis of Gowers, and is the exact type of all consequent deductions which follow from this fundamental assumption of the causal hypothesis. If there is no trigger impact there will be no explosion; if there is no cause there will be no effect.

It may perhaps be claimed in the interests of scientific purity that it would be erroneous to assume that there is anything within the muscle itself to endow it with responsiveness, or that the mind of a child is anything but a blank sheet to be written on by the experience of consequent events, or that there is anything within the cartridge to cause it to explode. Scientific purity must, however, recognise the danger that this is only an assumption and does not in any way demonstrate something which has been proved. For it is quite certain that if the assumption is regarded as a hypothesis it will also be regarded as something which need not be proved and is therefore to be accepted as scientific orthodoxy. But is it true?

The patient is as ready to fall into the causal trap as the physician. He also is looking for a cause and has many ready to offer, from which we may make a generous selection. If it is not a cause, then it is a fault, which is the same assumption on the plane of morality, and it is particularly in his attitude towards disorders of the mind that the physician is apt to recognise as faults what he is not able to understand as causes.

As soon as it is examined impartially, the weakness of the causal hypothesis becomes very plain. It is interesting to note that in the experiment with the muscle-nerve preparation we are not dealing with one cause but with two—namely, the positive and negative electrodes—and we are also dealing with the interaction of the positive and negative electrodes with the cellular structure of the nervous tissue through the surrounding medium of the saline. Here is a multiplicity of causes and we cannot rightly say that the contraction of the muscle has any single cause. Similarly the satisfaction of the physician at his patient's recovery may well feel inclined to assume the generous reward of having been the cause through the skill of his remedies. But there are often other causes, and these may be a legion, such as the patient's natural capacity for recovery, possible changes of external circumstance, the advantages of an enforced period of rest, or the satisfaction of a relationship between the patient and the physician, which quite erroneously endowed the latter with the power and wisdom which were not really his, but nevertheless afforded the patient a great deal of comfort and of courage.

There is no "first cause" other than our primary assumption, or the hypothesis which we accept as the axiom which needs no proof. For the rest, we are always dealing with a double causal chain of relationship, a chain which has no beginning and no end in the eternity of time. Upon these causal chains isolated events occur (through the intersection of another causal chain) to alter the direction of subsequent events. This isolated event (or nodal point) may be said to "cause" the change of direction and to this extent the causal concept is valid; but it is never more than a fraction of the whole trend of ætiological significance, which is essentially a matter of relationship between two or more moving sequences.

The Need for the Causal Concept

There is a great sense of personal satisfaction to be gained out of the causal concept and that may explain why it has continued for so long. It is part of the fallacy of free will and the great "I am," an aspect of the false majesty of personal responsibility. Although it has not been generally recognised as such by the orthodox psycho-analysts, it seems to be an essential part of the psychopathology of hysteria, which is inclined to exaggerate the importance of external things and also to make the great assumption "I am the cause, but you are the effect." The recognition of relationships is part of a more mature development, which is prepared to regard responsiveness as of a higher order than responsibility and which allows at least equal causative importance to others besides oneself. The mind seeks the comfort of the simplicity of single systems: in the flux of our uncertainty we wish to find one cause, and having found to fix. But reality never does give us just

what we want, and however much we may want to be or find the one and only first cause, we must eventually recognise that we are in fact dualistic related systems within ourselves, as well as also related to the social order of those amongst whom we live.

But what then do we mean by "cause," and how has it come to take the place which it has assumed in our scientific structure? The concept has been much criticised in recent years by the physicists, but up to now it seems to have maintained its full integrity within the world of scientific medicine and psychology. It seems that what we really mean when we speak of a causal sequence can better be described as a "time chain," a series of events connected and related through the medium of time. Before time was recognised as the fourth dimension of a space-time continuum, the concept of cause was required to take its place to explain the data of observed phenomena. Although it is now many years since the fourth dimension became part of the jargon of the physicists, the time concept has not yet displaced the causal concept in medical orthodoxy. Whether it be in mind or body, however, the material of our observation is thus four dimensional and time must be recognised as being quite as important as the three geometrical dimensions of space. The causal chain will then become a time chain, in which a connected series of ordered events is seen stretching in the direction either of past or future. Thus the teleological, or goal-seeking, concept is merely the reverse or balance of the causal one and implies the same fallacy. Similarly, whether the physician is treating the symptom or what he chooses to regard as its first cause, the same fallacy of the causal concept may apply when once we recognise that such first causes do not in fact exist, but are themselves a series of effects in a time relationship.

It may be objected that certain events are of vital importance and that being run over by a 'bus really is the cause of a broken leg. However, this undesirable experience may be expressed more accurately, although at greater length, by describing it as the intersection of two time-sequences, in which the 'bus time-sequence crosses the leg time-sequence, with disastrous effects upon the leg. If we seek causes we find two causal time chains: what caused the 'bus to be where it was, and what caused the driver of the 'bus to do as he did; what caused the leg to be where it was, and what caused the leg eventually to heal? These are not truly to be regarded as being causes but as a series of related time-effects. There is also the case of the dose of poison; did not this cause the disaster to the gastric mucosa, and did not the antidote cause the recovery? But it was not quite so simple, for the gastric mucosa was active, not passive, and played as much part in the causation as the poison. Poison and mucosa are in a relationship which must be regarded as a whole if we are not to add an insult to the injury.

A gastric ulcer is the cause of pain and its removal will cause the pain to disappear, unless or until the causal chains which produced the gastric ulcer again assert themselves. A foreign body inserted into the organism at any point will cause inflammation and the removal of the foreign body will cause the inflammation to disperse. In the latter case the question may well be asked: But what is the causal chain that led to this event, and is it likely to recur? If it was an accident (e.g., a gunshot wound) the matter may well be considered to be over. But perhaps this patient is in the habit of inserting unfamiliar objects into inconvenient orifices? The remedy is then not to regard the object as the cause of the inflammation, but to follow the causal chain back to the patient who put it there. Why did that happen? The answer will always be found to be an error of relationship between subject and object, self and circumstance. There is always this equilibrium between the two causal chains of the event itself and the person to whom it happens, a balance of interacting forces. The remedy is not complete until this equilibrium is recognised and treated as a whole.

We may describe these events or nodal points of vital importance, these dynamic adventures and misadventures upon the time-chain of life, as being "causes" as long as we do not extend the principle beyond the limits of its validity to include a general fallacy of cause and effect which is not true. Time and cause are not the same, for time is reality and cause is not. Cause is but a phantasy and a convenient fiction which knowledge may much more simply bridge with the time concept.

The Hypothesis of Balance

It has already been stated that the alternative hypothesis to that of causality (ætiology) is not teleological (goal-seeking) but is that of balance (equilibrium). All life is thus assumed to be a relationship of the same type as that of the twin poles of the electrodes in the muscle-nerve experiment. The poles themselves are in relationship with the nerve-cells, as the nerve-cells are in relationship with the muscle. There is nothing out of the way in this assumption and as hypotheses go it seems to be a very safe one. The trouble about the cause and effect hypothesis was that it tended to consider everything in terms of a single thing-by-itself. As a matter of experience, however, things do not occur by themselves, but always in association and relationship. Hearts and livers are not things-by-themselves, but aspects of a relationship which determines their function. The entire nervous system is of the same type of a balanced relationship of plus and minus, impulse and inhibition. Mind itself is of the same dualistic scheme of appetite and conscience. The patient is in a relationship with the physician and also with the members of his family and of the community. Where the causal concept could never hope to see the whole of any situation, the hypothesis of balance will find it much more difficult to miss it.

The importance of a hypothesis is limited and does not affect the validity of data which have been observed independent of it. Scientific truth is not in itself effected by a fallacious hypothesis, but only such deductions from it as are based upon the hypothesis and not on the observed phenomena. Thus nothing is in fact lost by abandoning the causal hypothesis and substituting in its place the alternative one of balance. Much is gained, however, by the abandonment of false techniques and false assumptions, and by putting in their place a more general recognition that we are always dealing with at least two and possibly more combined relationships, the separation of which into individual entities is at the expense of the loss of their meaning as a whole. We can at last see things in terms of wholes instead of in the false simplicity of unrelated parts, and the general tendency of specialisation must be prepared to recognise a greater truth, namely, that the patient always acts as a whole and is at the same time in relationship with that environment of which he is a part.

Trained in the causal fallacy and the false simplicity of subdivided specialisms, physicians still fail to recognise the meaning and relationships of mental illness. But if once the hypothesis of balance is accepted, the phenomena of mind can no longer be dissociated from those of body, nor can the technique of its treatment be ignored as "unscientific." It is true, however, that psychological treatment in particular may derive benefit and simplification from the substitution of the hypothesis of balance for that of cause and effect. We need no longer pursue the endless chain of the infinite regress, arguing about

whether the cause is an Œdipus complex, a breast frustration, or a birth trauma. The facts present themselves in terms of balance and it is the relationship of the patient with the physician which is the first step in the time chain of recovery. The problem which presents itself is not one of digging out a root, but of discovering the forces in the balance and the distorted attempts which Nature is making to restore poise and to uphold a leaning tower. For Nature is not wrong and therefore to be punished; the symptom-complex which is presented to us as a disease, with the request that it should be removed as the cause of the trouble, is really only an attempt at cure according to the natural behaviour-patterns of self-defence. It is not at all a difficult matter to recognise balance as being of the essence of the problem of disease, whether the nature of the distressed condition is to be found in body or in mind.

The fallacy of "cause and effect" is inevitably associated with the old morality of fault-finding and punishment. "Here is something of which we do not approve, it must go," is the technique of the old-time autocrat. But the hypothesis of balance recognises, in the symptom itself, an evidence not of evil past but of present good intentions. Here is not anything to be drastically cut out root and branch (though it is safe to grant that this may be needed sometimes in our ignorance of better ways), but something to be restored as an integral part of the balanced unity of function.

For the symptoms of disease are always an attempt to preserve or restore a balance. This same law applies to flowing blood or indigestion, catarrhal inflammation, or high blood pressure, as well as to the fighting, stealing, or lying of the behaviour problems of the naughty child. The method of punishment is in all cases a bad technique because it makes enemies through ignorance.

Clinical Aspect

From the point of view of treatment there is a difference of great importance between the two hypotheses of "cause and effect" and "balance." The former implies a moral assumption that something "wrong" is to be eradicated, and that if you remove the cause you will get rid of the effect. The latter implies that nothing is to be eradicated without some vital loss. Treatment upon the hypothesis of balance will aim at either assimilation of the offender into service or the restoration of poise by the use of some counteracting antidote. The former is curative in the fullest sense, the latter is a useful palliative measure in any crisis, but both are directed towards the goal of restoration of the vital balance.

It is impossible in this paper to do justice to the clinical bearings of the hypothesis of balance, but consideration of the very common dream of missing trains may be of some interest. It is very similar in meaning to the other common one of the bag that will not get packed, and the feeling of inefficiency in dreams which may amount to one of total paralysis.

The attitude of mind of such a dreamer is "I can't," and the implied assumption is "but I ought to be able to." The hypothesis of balance suggests that this is not at all the case, but that two time-trains are in a state of conflict, fast and slow, positive and negative; so that the actual normal time-train is neither of these, but one which lies midway between the two, neither fast nor slow. The advice to the dreamer then becomes: "You should never try to catch that train; you are in too much of a hurry and that is why you feel you are so slow; be content to go slow, and though you do miss that train, you'll catch another. You're too competitive; be content to be what you are. If that is too difficult, let's look and see why you are off the rails of your true time-train."

The attitude of "feeling persecuted" is related to its balance of "demanding privilege," for the one is never found without the other. The mood of the compulsive rebel is related to that of the frightened child, and for cure to be achieved both must be held in the balance together, to be equally accepted in the inclusive whole.

A patient who complained of giddiness and fear of falling, for which she had received much physical treatment without benefit, was found to be demanding external support; she had always been dependent upon her mother, and latterly upon her husband, but in course of time her mother died and she felt that her husband's support was insufficient. The cure was first to give her the support she needed by sympathy and understanding; and, secondly, to teach her how to do without it, so that she might face even death alone and unaided.

Similarly the patient who comes to be cured of an "inferiority complex" is taught how to accept inferiority: for the disturbance of his balance being due to "I must be superior," his recovery is obtained by the acceptance of the fact of balanced relationships.

Shock of any kind is a disturbance of balance.

In 1917 a man was blown up in a dug-out, after which he spent a year in hospital suffering from "nerves." He never fully recovered, but suffered from nightmare dreams, insomnia, and periods of depression, with inability at all times to face company or responsibility, for which he received a variety of treatment by drugs. When he came for psychological treatment he was shown how he had tried to preserve his balance by flight, and it was explained to him how his symptoms were the balance not of his fear, but of his flight from it. He was able to turn round, to retrace his steps and face his fear, back to the shock of the war experience itself. Although his treatment occurred 16 years after the accident, after only six weeks he said: "I feel a new man; I am hopeful and confident; I have no more war-dreams."

Insomnia is liable to be completely misunderstood if it is regarded from the point of view of cause and effect. Sir Maurice Craig, writing on the barbiturates in THE LANCET of Feb. 3rd, 1934, p. 260, said: "Insomnia, if unrelieved, is an important factor in bringing about confusion of the mind, and I have little doubt that as a cause of suicide it far overstrips any one method which may be used to bring about this tragedy." These words are liable to be understood to infer that insomnia is the cause, and mental illness the effect: the deduction follows that if we cure the insomnia, then the effect does not occur. This is a very good example of the way the causal fallacy is liable not only to influence our misunderstanding, but also the method of treatment which we adopt. Is insomnia the cause of melancholia or is it only a co-symptom, an effect amongst a series of others? If insomnia is not really the cause of melancholia (it is not suggested that Sir Maurice Craig really believes that it is), is it in fact the cause of any mental breakdown? Insomnia, on the other hand, is said to be caused by pain or worry, or mental restlessness, with or without the existence of some real external agent; of any of these it may be an effect, and it is the antecedent cause, whatever that may be, which then requires treatment. Merely to interfere with the insomnia must surely be bad therapy, but it seems too often to be regarded as the one essential step in treatment. The hypothesis of balance cannot make this mistake. We ask ourselves instead, "What has disturbed this patient's balance and in what way is it disturbed? How can it be restored?" Drugs may be useful on occasion, but indeed it may have been the use of drugs which has upset the balance. It is quite certain that drugs are habitually misused in insomnia, owing to this false hypothesis

of cause and effect, and its implied assumption that the swallowing of a magic dose will do something miraculous. Drugs obscure symptoms and complicate the picture of the disease by developing still other symptoms of their own. If we stop to think, we should realise that neither barbiturates nor any other drugs are by themselves capable of restoring the vital balance of health. Insomnia is an attitude of mind, an aspect of the mental function in ill-health, a disturbance of balance; and as such it shows the balanced values of both cause and effect.

It is through our clinical experience that we may prove the value of these or any other hypotheses. But printers know more about this word, proof, than many would-be scientists do, for they accept the original meaning of "test" rather than that later and quite fallacious meaning, "fixed true." The proof is in the proving by test and trial, and what was once proved right may later be proved wrong, as we add to the measure of our understanding.

The Concepts of Time and Force

There are three further aspects of this problem which seem to be of fundamental importance in the development of medical science. The first is to recognise the time factor as being worthy of investigation as an aspect of the body-mind relationship and function. The fallacy of cause has obscured the essential nature of the problem of time. But time as a fourth dimension is as worthy of our investigation as the geometry of space, and if once we can break clear of "causes" we may be able to observe something more definite in the multiplicity of data with regard to time. This no longer belongs to the abstruse field of metaphysics, but becomes an aspect of the reality of common sense and general medicine. Whatever else time may be, it certainly is not the clock on the mantelpiece or its counterpart upon the convenient scale of consciousness. Time is an aspect of matter, an integral part of the material function both of body and of mind. It is perhaps particularly in the psychological field that this is of importance, but it is a commonplace that a mere knock on the head, a dose of anæsthetic, or falling to sleep, introduces us to an unfamiliar world in which conventional clocks do not exist. This is a matter of fact, but because we have not understood the "cause" of it we have regarded it with unscientific prejudice and ignored the nature of its meaning. Have we ever stopped to think what time means in disease and why periods of incubation and recovery seem to obey certain time laws? Time is accepted without question, but what does it mean? If time is an aspect of matter, it is as worthy of research and understanding as any other measurable part of material phenomena. At present it is a blind spot in science, but if we could see more of its meaning we might see much more of other meanings that are related to it.

The second material advantage which we may expect to accrue from such an alteration in our hypotheses is that we may at last be able to understand more about the autonomic system, and to give it the place of honour and importance which it deserves in the function of the body as a whole in health and in disease. So far it has been dissected, but because it is not of obvious importance amidst the serried ranks of blameable causes, it has almost entirely escaped our deeper understanding. Yet as a medium of balance it would seem to be a most important matter for the functioning of the organism as a whole.

What is of even greater importance is the fact that acceptance of the hypothesis of balance does at one step allow us both to recognise and remedy our utter deficiency with regard to the fundamental processes of the source and distribution of the energy of mind and body. It is a fact that the causal concept has left us entirely ignorant upon this essential matter, which must always be the basis of all behaviour both in body and in mind. If we are to seek for causes, it is not upon the level of material form but of the force which seems to be so intimately related with it. The causal concept allowed us to understand nothing whatever about force, and in fact has utterly obscured the whole problem so as to make it practically non-existent. The hypothesis of balance, however, does introduce us to the dynamic relationship of plus and minus, which is the essence of every aspect of force that we know in the field of physics. The balanced system occupies the whole field of our observation all the time, the yes and no of life, the rhythm of night and day, life and death, of base and acid, of impulse and inhibition, of appetite and conscience, but it will never be possible to pursue this most fruitful field of inquiry until we have abandoned the fallacy implied by cause and substituted in its place the alternative concepts of time and balance. It is suggested that cause and effect, ætiology and teleology, are themselves merely aspects of this greater principle of balance, which underlies the working system of the whole body-mind relationship.

ACUTE PNEUMOCOCCAL PHARYNGITIS

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Acute pneumococcal pharyngitis is a disease which occurs infrequently and about which the literature seems to be very scanty. The course of the illness is dramatic and the mortality from it is extremely high. For these reasons the record of eleven cases suffering from this disease admitted to the City Hospital, Aberdeen, between February, 1932, and June, 1933, may be of interest.

A SURVEY OF THE LITERATURE

It is generally admitted that the pneumococcus may be found in the throats of a large percentage of healthy individuals, and as early as 1898 Bezançon and Griffon demonstrated the presence of the pneumococcus on the surface of the tonsil and concluded from their inquiry that it existed constantly as a saprophyte. Much has been written on the probable incidence of the pneumococcus in the human throat, and recent investigations, in which accurate methods of identifying the pneumococcus have been used, have established the conclusion that the organism is not infrequently present in the mouths and throats of healthy individuals. Meyer, Pilot, and Pearlman (1921) investigating the throats of a number of children, some of whom had had tonsillectomy and some of whom had not had this operation, found the pneumococcus present in 32 per cent. in each series. Cruickshank (1933), in his recent Milroy lectures, states that the pneumococcus is present in the throats of from 90–100 per cent. of healthy individuals. There is a consensus of opinion that the pneumococcus is definitely present in the throats of a large proportion of healthy individuals.

The evidence in literature of the existence of minor inflammations of the upper respiratory tract, particularly of coryza, influenza, and rhinitis, due to the

pneumococcus, is considerable. The literature, however, on pneumococcal pharyngitis is strikingly scanty. No description of the condition can be found in any of the more important English text-books, and in most of the earlier recorded cases convincing evidence as to their true pneumococcic nature is lacking. I have been unable to find a formal account of pneumococcal pharyngitis with associated pneumococcal septicæmia.

H. Pasteur (1905) describes a fatal case of pneumococcal tonsillitis, and his description of the local conditions of the throat is very similar to the conditions met with in my cases. Goodall (1906) and Young (1907) both state that membranous inflammation of the throat may be set up by the pneumococcus, and that the condition is very similar to that due to the streptococcus, the diagnosis resting finally on bacteriological examination. Goodall (1915) describes an outbreak of tonsillitis among the domestic staff of the Edinburgh Infirmary in which "a new Gram-negative diplococcus" was isolated. Pybus (1915) and Fraser (1916) describe a fibrinous exudate on the surface of the tonsil of pneumococcal origin. Most of the reports appear in French literature: Reh (1917) reports nine cases; Heindle (1920) mentions two cases reported by Paltauf and six by Koritschouer, and he himself describes an epidemic of what he termed "angina faucium" caused by the *Diplococcus lanceolatus pneumoniæ*, and records the striking results in a few cases treated by what he termed "pneumonia serum"; Riser and Bert (1923) report two cases. Fox (1932) describes pneumococcic membranous nasopharyngitis in infants, and mentions also that he has met a similar condition in adults. He states, however, that the severity of the disease is not so great in older patients. Rickey (1932) reports five cases of pneumococcal pseudomembranous pharyngitis. The latter two authors record the successful results of treatment with hydrocupreine hydrochloride.

Careful examination of cases of sore-throat reveals a great number of different organisms, but the *Streptococcus hæmolyticus* is found with such regularity and in such numbers of cases of sore-throat that there can be little doubt that it is the principal cause of acute tonsillar inflammations. Considering the frequency with which streptococci and pneumococci are found together in the healthy human throat, it follows that both these organisms will often be found in infective conditions of the throat, hence in many instances it is impossible to say which is the causal organism and which is the secondary invader.

AUTHOR'S CASES

Ten of the eleven cases occurred within twelve months, and since the pneumococcus holds an important place as a secondary invader following influenza it is pertinent to note that during the winter of 1932–33 there was a definite influenzal epidemic in the city of Aberdeen. From December, 1932, to March, 1933 (inclusive), 53 cases were notified, as compared with 12 cases for the whole year of 1930, 18 for the year 1931, and 20 for the year 1932. McLeod (1929) states that the most frequent lesion produced by the pneumococcus is a catarrhal condition of the upper respiratory tract, associated with slight or considerable pyrexia, and often popularly described as "influenza." Although a high percentage of the community is infected with the micro-organism, in no instance in the series was there a history of contact with an acute or recent case of lobar or broncho-pneumonia or of case-to-case infection. In one case the disease occurred in a man who had recently had influenza, but all the other recorded cases occurred in presumably healthy individuals of comparatively good social surroundings.

The local signs of pneumococcal throat infections are in no sense distinctive, but the history of onset, the symptoms, the local findings, and the rapid prostration when taken together present a picture which is highly characteristic. The final diagnosis, however, rests on bacteriological findings.

The onset is usually quite sudden, often with rigors or chills. The throat is sore and rapidly becomes worse, and very soon the patient feels miserably ill, develops a high temperature and rapid pulse, has much pain in swallowing, and is with difficulty persuaded to take food or fluids. In the early stage the pneumococcal tonsillar and faucial inflammation is impossible to distinguish from that due to the streptococcus. In most cases there appears early, together with redness and œdema of the throat generally, a fine greyish membranous exudate extending over the uvula and soft palate. The membrane develops rapidly, and very soon the appearance is that of a severe diphtheria. It may, however, be noted as a differentiating feature that instead of the tendency to localise itself to the tonsils and fauces, as in diphtheria, it may be absent from these parts and only present on the uvula and soft palate. This was so in two of the eleven cases. More frequently the membrane spreads quickly over the throat generally, often involving the posterior wall of the pharynx, and spreading occasionally to the epiglottis, causing inflammation and œdema. It is darker in colour and much drier in appearance than in diphtheria or Vincent's angina, and is accompanied by sordes and slimy mucous secretions of the mouth and throat. Mouth-breathing is marked, the tongue is dry and fissured, dysphagia is very severe and dyspnœa frequent. There is no characteristic fœtor. There is frequently marked swelling of the neighbouring lymphatic glands, more than is seen in diphtheria and Vincent's angina, and the extreme tenderness of these regional glands even in the early stage has been a marked feature.

There appears to be no response to treatment, the membrane continues to spread, and very soon there is intense congestion, necrosis, and sloughing. Occasionally œdema of the glottis results, and in three out of the eleven cases tracheotomy had to be performed to relieve the dyspnœa. The temperature is continuously high, the throat becomes progressively darker in colour, drier, and more necrotic, and there is marked toxæmia and extreme prostration. Usually circulatory failure and death rapidly supervene.

All the cases showed the predominance of pneumococci in cultures made from throat secretions, and ten of the cases had an accompanying pneumococcal septicæmia of the identical pneumococcal type to that found in the throat. Case VII. had an associated lobar pneumonia which occurred comparatively late in the disease; in this case the causative organism was pneumococcus Type I. and the patient recovered.

CASE I

A. B., aged 27, complained of sore-throat on May 13th, 1932, and the family physician, who saw her first on May 15th, 1932, treated the condition as follicular tonsillitis. As a precautionary measure a throat swab was sent to the laboratory to exclude diphtheria. On May 17th the condition was very much worse and the patient was admitted to the City Hospital as a case of diphtheria.

On admission the patient was very toxic and slightly delirious, the temperature was 102° F., the pulse-rate 126, and the respiration-rate 24. There was no evidence of any exanthematous eruption. Examination of heart, lungs, abdomen, and central nervous system revealed no significant abnormality. The tongue was thickly coated with a dry fur, there was bilateral tender cervical glandular enlargement of a moderate degree somewhat more marked on the left than on the right side and very tender to palpitation. Dysphagia was severe. The throat was

congested and œdematous with light coloured membranous exudate on both tonsils spreading over the uvula and on to the soft palate. There was no fœtor and no respiratory obstruction. Although the appearance of the throat was noted as not being typical of diphtheria, in view of the toxicity the patient was given 40,000 units anti-diphtheria serum intravenously, and 60,000 units intramuscularly a few hours later, and put on strych. sulph. gr. 1/100 four-hourly. Fomentations were applied to the neck. Next day the condition of the patient was worse, she was motionless, staring, and having low muttering delirium. The throat was much as on admission, but there was extension of the brawny swelling of the neck which was exquisitely tender. Temperature 102° F., pulse 136, respirations 24.

Bacteriological examination of the throat and nose swabs failed to show *B. diphtheriæ* or Vincent's bacillus, and she was given 20 c.cm. streptococcal (scarlet fever) antitoxin intramuscularly. Cultural examination of the throat swab showed mainly pneumococci—Type III. The following day the condition of the patient was even worse. The œdema was spreading from the neck posteriorly over the mastoid and occipital regions, but there was little difference in the throat condition except that the membrane was becoming darker in colour and drier. She was examined by the oto-laryngologist who reported no retropharyngeal abscess, no mastoiditis, and no Bezold's mastoiditis.

A blood culture was taken on May 19th and found to be sterile, while the Wassermann and Kahn tests were both negative. Novarsenobillon 0·03 g. was given intravenously and repeated twice in two-day intervals. A solution of novarsenobillon (0·03 gramme to 4 drachms) was sprayed locally on the throat four-hourly.

For the next few days there was progressive invasion of the throat with membranous exudate, which was now becoming streaked with blood, darker in colour, and more necrotic. The toxæmia was striking and the patient was in a semi-stuporose state, with low delirium and quite unable to answer questions intelligibly. At this period the temperature varied from 99° to 102° F., the pulse-rate from 96 to 136, but the respiration-rate was normal.

On May 26th there appeared to be slight softening of the glandular swelling on the left side of the neck. This was aspirated and a few cubic centimetres of dark-stained fluid were withdrawn. This side was consequently freely incised, and although no frank pus was found there was an escape of necrotic blood clots in an inky black watery fluid. This procedure revealed extensive necrotic destruction of the glands and of the deeper tissues of the neck. The wound was lightly packed and fomented. Culture of the fluid showed pneumococcus—Type III.—only

By this time there was considerable ulceration, necrosis, and sloughing of the fauces, uvula, and soft palate. A further blood culture taken on May 25th remained sterile. On May 27th the temperature rose to 103° F., and from then to the end remained high. Pulse 120, respirations 24. The condition failed to respond to treatment and the toxæmia increased with subsequent circulatory failure and death on May 30th, 1932. This woman was exactly fourteen days in hospital.

Post-mortem findings.—A large dark blood clot was removed from the neck wound revealing a sinus leading to a necrotic cavity in the pterygoid region with great local tissue destruction but no frank pus. The lungs showed hypostatic congestion but no consolidation, and the bronchi appeared healthy. The myocardium showed toxic changes but there was no endocarditis. No free fluid was present in the abdomen, and apart from some toxic enlargement of the liver the abdominal viscera showed nil abnormal. The brain was normal.

Summary of laboratory findings.—Throat swabs taken on May 19th and May 21st were negative for *B. diphtheriæ* and Vincent's bacillus, but culture of these specimens showed pneumococci, mainly Type III.

Blood cultures taken on May 19th and May 25th were sterile. Needled fluid from neck gland on May 26th. Culture showed pneumococci Type III.

Blood examination showed a secondary anæmia associated with a very marked polymorphonuclear leucocytosis.

Blood culture (taken directly from heart at autopsy) gave profuse growth of pneumococci Type III.

CASE II

C. D., a married woman aged 54, had been ill at home for four days with a sore-throat, and was seen on July 13th, 1932, by an ear, nose, and throat surgeon in consultation with the family physician and admitted at once to this hospital. On admission temperature was 100° F., pulse 144, respirations 42. Great œdema of the soft palate, uvula, upper part of larynx, and epiglottis was present, while the fauces were intensely congested and covered with dry, dark, necrotic sloughs. Sordes was present and the tongue was furred and dry. There was massive bilateral cervical adenitis, very tender to examination. Dyspnœa was distressing and tracheotomy had to be performed on admission. This was successful in relieving the respiratory embarrassment, but the patient became more and more toxic and died 24 hours after admission.

Laboratory findings.—Throat swab: culture failed to show *B. diph.*, but showed pneumococci mainly. *Blood culture:* profuse growth of pneumococcus Group IV. only.

CASE III

E. F., aged 35, was treated at home for two days as a case of follicular tonsillitis. I saw the patient on Oct. 14th, 1932, and admitted her at once to hospital. She had decided respiratory difficulty, was jaundiced, extremely toxic, and almost comatose. There was massive enlargement and tenderness of both tonsillar glands. Examination of the mouth revealed a foul black necrotic slough covering the tonsils, fauces, uvula, and posterior pharyngeal wall. There was dark, blood-stained, membranous exudate on the hard and soft palate, and numerous shallow ulcerations on the buccal and gingival surfaces of the mouth. The patient was cyanosed and the breathing stertorous, but there seemed to be no mechanical obstruction. Temperature 104·4° F., pulse-rate 148, respiration-rate 56. There was hypostatic congestion at the lung bases, but no evidence of consolidation. The reflexes were normal, and apart from the intense toxæmia all the other findings were negative. The patient died eight hours after admission. Unfortunately a blood culture was not taken in this case.

Laboratory findings.—Throat swab (before admission): negative for *B. diph.* *Throat swab* (after admission): negative for *B. diph.* and Vincent's bacillus; culture gave profuse growth of pneumococcus Type III.

CASE IV

G. H., a married woman aged 58. The illness commenced suddenly on Oct. 27th, 1932, with sore-throat and shivering. At first the family physician treated the condition as an acute follicular tonsillitis, but two days later he sent her to hospital on account of the rapid toxæmia and laryngeal obstruction.

On admission the patient was extremely toxic and ill. The temperature was 103° F., pulse 136, respirations 38. There was slight cyanosis. Dysphagia was marked. The heart was acutely congested and very œdematous, and membranous exudate was present on both tonsils, posterior pharyngeal wall, and soft palate, with black necrotic sloughs over the left tonsil and to a less extent on the right. There was marked tenderness of both tonsillar glands although they were not greatly enlarged. The mouth and tongue were dry and coated with sticky mucus. Nothing abnormal in chest, abdomen, or central nervous system.

The respirations gradually became more difficult and the chest retraction more marked, so that tracheotomy became necessary. This was done six hours after admission, and for a time appeared to relieve the symptoms. The toxæmia, however, increased and soon there was circulatory failure and the patient died 24 hours from the time of admission. Cultural examination of the throat and nose swabs revealed mainly pneumococcus Group IV., while the blood culture also showed the same organism.

CASE V

I. J., a married woman aged 65, was treated at home for five days as a case of ordinary tonsillitis. Marked toxicity and dyspnœa developed and the practitioner in charge admitted her urgently to hospital for tracheotomy thinking that he had "missed a diphtheria." She was acutely ill and gasping for breath, although there was no associated chest recession nor obvious inspiratory obstruction. Temperature 102° F., pulse 132, respirations 32.

The throat was sheeted with black necrotic membranous exudate extending over both tonsils, uvula, soft palate, posterior pharyngeal wall, and epiglottis. There was a good deal of ulceration and bleeding from local sloughing areas. The tongue was dry and fissured, and the buccal mucosa was dirty with sticky inspissated blood and mucus. There was bilateral tender cervical adenitis. Nothing abnormal was found on examination of lungs, abdomen, or central nervous system. The pulse was rapid and feeble, and the heart, although not dilated, showed signs of failure.

Tracheotomy was performed with the hope of relieving the cyanosis, air-hunger, and dyspnœa, but although the operation was easy, and done by the stab method, no relief was gained and she died shortly after of apparent circulatory failure. This patient was only six hours in hospital.

Laboratory findings.—Throat swab: pneumococcus Type III. *Blood culture:* pneumococcus Type III.

CASE VI

K. L., a man aged 39, who was admitted to hospital on Dec. 1st, 1932, as a diphtheria with a history of a sore-throat for two days. The patient was grey, sunken, and extremely toxic, although perfectly normal mentally. Temperature 102° F., pulse 136, respirations 26. Examination of the throat revealed great œdema and congestion of the fauces, posterior pharyngeal wall, and soft palate, with dark blood-stained membranous exudate on both tonsils and faucial pillars. The tongue was furred and dry, and there was an extensive associated gingivitis. Dysphagia was very marked and a moderate degree of dyspnœa was present with mouth-breathing, restlessness, and an anxious expression. The cervical glands were enlarged and extremely tender. Heart action regular, but distinct softening of the first sounds. Examination of chest, abdomen, and central nervous system revealed no significant abnormality.

The patient pursued a rapid, downward course and died 36 hours after admission.

Laboratory findings.—Throat swab: pneumococcus Type III. *Blood culture:* profuse growth of pneumococcus Type III.

CASE VII

M. N., aged 44, was notified as a case of diphtheria and admitted to hospital on Dec. 2nd, 1932. Her illness commenced on Dec. 1st, 1932, with sore-throat, sickness, and vomiting. When admitted the patient looked very ill and was afraid to move or speak because of the acute pain in her throat and neck. Temperature 100° F., pulse 104, respirations 24. There was no exanthem. The tongue was coated with a dry sticky grey fur, and examination of the throat showed a small amount of dark grey membrane on the posterior faucial pillars with accompanying œdema and congestion generally. The cervical glands were only slightly enlarged but palpation caused extreme pain and choking feeling. Examinations of heart, lungs, abdomen, and central nervous system revealed no significant abnormality. On admission she was given 20,000 units of diphtheria antitoxin and 10 c.cm. streptococcal antitoxin intramuscularly. Routine bacteriological cultures were taken.

The following day the temperature rose to 101·4° F. and the pulse-rate to 114, the respirations remaining at 24. The throat was still œdematous and very congested; the slimy dark exudate was still present on the faucial pillars and there was commencing necrosis of the uvula. The neck glands were enlarged and forming a swollen tender collar.

On Dec. 4th the findings of the blood culture revealed pneumococcus Type I., hence 20,000 units of Felton's antipneumococcal serum containing 10,000 units each of Type I. and Type II. were given intravenously. On that day the patient was slightly brighter. The throat was still congested but more cyanotic-looking, and the membrane was disappearing and leaving a slight necrotic patch on the uvula and right faucial pillar. Dysphagia was still very marked and the cervical glands were even more tender. Later in the day she was given a further 20,000 units of Felton's serum intravenously. The condition remained unchanged on Dec. 5th, and a repeated blood culture again showed the presence of pneumococcus Type I. On Dec. 6th there appeared a crop of herpes on the lips with a rise in the respiratory rate from 24 to 32, and a fall of temperature to 99°.

Next day, although the temperature still remained at 99°, pulse at 106, respirations at 30, there was definite evidence of a right basal consolidation and classical auscultatory signs of a lobar pneumonia. Blood culture taken on Dec. 9th was sterile. By Dec. 10th the patient was afebrile with considerable improvement in the general condition. The throat was now clean but still congested, and the cervical adenitis was subsiding. The patient had rapidly lost flesh and was now decidedly exhausted; she remained afebrile, but convalescence was slow and complicated on Dec. 27th by an acute suppurative otitis media, the culture of pus showing a profuse growth of streptococcus. She was discharged for home well on Jan. 6th, 1933.

Summary of laboratory findings.—Throat and nose swabs (Dec. 2nd, 1932): negative for *B. diph.* and Vincent's bacillus. Culture showed mainly pneumococcus Type I. *Blood culture* (Dec. 2nd): pneumococcus Type I. *Throat swab* (Dec. 4th): pneumococcus Type I. *Blood culture* (Dec. 9th): sterile.

CASE VIII

O. P., aged 48, admitted to hospital on Jan. 1st, 1933. His illness commenced with "influenza" on Dec. 29th, 1932, when he was confined to bed for one week. He, however, had evidently quite recovered from this illness and resumed work on Jan. 10th, 1933. On Jan. 12th he developed a sore-throat. The following day the throat felt worse and there was difficulty in swallowing, enlarged and tender neck glands, and slight epistaxis. The same evening the patient had shivering attacks and became delirious. On Jan. 14th the attending physician noted a decided jaundice, but there seemed to be an apparent improvement in the general condition, although there was more definite enlargement and tenderness of the neck glands.

When admitted to hospital on Jan. 16th the patient was moribund. Temperature 100° F., pulse 112, respirations 42. There was extreme jaundice. The throat showed extensive necrosis and sloughing of the fauces and uvula. The buccal mucosa and tongue were dirty and coated with inspissated blood and mucus, and there was considerable epistaxis. The cervical glands were greatly enlarged. Examination of the chest revealed no evidence of consolidation, breath sounds pure, no adventitious sounds. The abdomen was symmetrical, showed no distension or local rigidity. There was no enlargement of liver or spleen. Heart sounds were feeble and irregular. The central nervous system showed nothing abnormal.

This patient was unconscious on admission and died two hours afterwards.

Laboratory findings.—Throat swab: pneumococci, mainly Group IV. *Blood culture:* profuse growth of pneumococci Group IV.

CASE IX

Q. R., a married woman aged 60, was notified as a case of diphtheria and admitted to a diphtheria ward on Feb. 5th, 1933. The illness had commenced six days previously with shivering and sore-throat. On admission she was very toxic and slightly jaundiced. Temperature 103° F., pulse 104, respirations 38. There was no rash. The tongue was dry, brown, and fissured, and sordes was present. The throat showed dark necrotic membranous exudate mostly on the left side, and slightly on the uvula and soft palate. There was profuse slimy sticky post-nasal discharge blocking the nasopharynx and resulting in nasal speech. The cervical glands were slightly enlarged and very tender. Examination of heart, lungs, abdomen, and central nervous system revealed no significant abnormality. The condition failed to respond to treatment and the patient became more and more toxic and died forty-eight hours afterwards of cardiac failure.

Laboratory findings.—Throat swab: negative for *B. diph.* Culture showed pneumococcus Group IV. *Blood culture:* pneumococcus Group IV.

CASE X

S. T., aged 26, complained of sore-throat and shivering on Feb. 25th, 1933. On Feb. 26th the throat was very sore and her doctor noted that it was generally very red and congested but showed no visible exudate.

The following day the patient became very ill. There was progressing dysphagia and inability to take food or fluid. Later in the day there was commencing dyspnœa,

and I was asked to see the patient at her home in consultation with the family physician. She was very toxic with an ashen grey complexion and alarmingly ill. Temperature 102° F., pulse 96, respirations 24. The throat was acutely inflamed and there was marked œdema of the uvula, soft palate, fauces, and posterior pharyngeal wall extending down to the epiglottis. Grey slimy membranous exudate was present on the anterior and posterior faucial pillars and to a less extent on both tonsils. There was no fœtor, the dysphagia was very marked, and the dyspnœa moderate. The tonsillar glands were just palpable but were decidedly tender. Indeed the whole neck was very tender to palpation and painful, the pain being described as throbbing and burning. Other physical findings were normal. She was admitted at once to hospital. The throat condition remained unchanged, but rapid prostration and dyspnœa due to cardiac failure resulted. Gurgling mouth-breathing ensued although there was no mechanical respiratory difficulty, and the patient died twelve hours after admission.

Laboratory findings.—Throat swab: negative for *B. diph.* and Vincent's bacillus. Culture showed pneumococcus Group IV. mainly. *Blood culture:* profuse growth pneumococcus Group IV.

CASE XI

U. V., aged 28, was admitted to the City Hospital on June 6th, 1933. Her illness commenced on June 2nd with sore-throat, and the patient was treated at home for four days. The condition got progressively worse and the practitioner admitted her as an emergency to the Aberdeen Royal Infirmary on account of the laryngeal obstruction. She was seen by an ear, nose, and throat surgeon, who immediately transferred her to the City Hospital as a severe diphtheria.

On admission she was pale, clammy, and extremely toxic, and was just able with great effort to give an intelligible history. She had had her tonsils removed about one year ago because of frequent attacks of tonsillitis, and this was the second sore-throat since tonsillectomy. The throat became progressively more painful and the patient had been quite unable to swallow anything for twenty-four hours and had had no sleep for two nights. On account of the excruciating tenderness she had great difficulty in opening her mouth, but examination of the throat revealed general congestion and œdema, with greenish-yellow exudate on the left tonsillar bed and dark necrotic sloughing membrane covering the posterior pharyngeal wall and over the epiglottis. There was no fœtor. Sordes was present and the tongue was thickly coated and dry. There was a collar of enlarged cervical glands which were extremely tender to palpation. The heart was failing, with consequent cyanosis of the lips, hypostatic congestion at the lung bases, and dyspnœa. Examination of the other systems showed no significant abnormality. The patient died twelve hours after admission.

Laboratory findings.—Throat swab: negative for *B. diph.* and Vincent's bacillus. Culture showed pneumococcus Group IV. *Blood culture:* profuse growth of pneumococcus Group IV.

TREATMENT

Other infections of the throat, membranous and non-membranous, all appear to have their appropriate treatments, and are usually satisfactorily dealt with, but in these cases of proved pneumococcal origin the results of treatment are indeed very far from gratifying. As there are very few cases of pneumococcal pharyngitis recorded I have been unable to find many suggestions to guide therapeutic measures.

In 1911 Morgenroth and his co-workers isolated ethylhydro-cupreine (Optochin) and drew attention to its high pneumococcicidal properties. Since then it has been used in the treatment of various types of pneumococcal infections, notably in conjunctivitis and empyema. Richey (1932) was the first to describe the use of optochin in pneumococcal pharyngitis, and stresses the gratifying therapeutic response he got in his series of five cases. Fox (1932) also treated pneumococcal nasopharyngitis in infants successfully with optochin. Obviously the condition met with in the present series of cases was much more severe than that described by these authors, considering the optimistic prognosis they give and the favourable results of treatment. Optochin was used in two of this series, given both as a spray and a local paint, but the response was disappointing. The bactericidal property of novarsenobillon is generally recognised and its use in the form of a spray for Vincent's bacillus is fairly well accepted. It was given in three cases but with equally futile results. In all cases stimulants were administered such as alcohol, strychnine, or digitalin. To five of the cases saline solution with glucose and brandy was given by rectum and four cases had each 200 c.cm. of saline with 5 per cent. glucose given intravenously. Dysphagia is so marked and the throat is so desperately sore that gargling is out of the question. Fomentations and iced soaks were applied externally with equally soothing palliative results. The administration of diphtheria and streptococcal antitoxins was shown to be useless.

Unfortunately only one case was due to the pneumococcus Type I. This case also had a septicæmia due to the pneumococcus Type I. and was treated with specific antipneumococcus Type I. serum and, probably as the result, was the only patient to recover. Curiously enough, however, this patient never showed the acute symptoms or the rapid toxæmia that occurred in the other ten. It must be remembered that rational specific serum therapy depends on correct bacteriological diagnosis, and the adoption of such treatment as a general routine is unfortunately negatived by the fact that: (*a*) the majority of cases appear to be due to the pneumococcus Type III. or Group IV.; (*b*) the gravity of the condition is seldom recognised by the attending physician in the early stages, and by the time the acute phase is reached and the patient admitted to hospital death occurs before the organism can be typed.

SUMMARY

There was little variation in the clinical manifestations throughout the group of eleven patients, nine of whom were women, aged from 26–65, two were men aged 39 and 48 years. All the cases were in good physical condition. There was no suggestion of contact with an acute or recent case of lobar or broncho-pneumonia, or another similar pneumococcal tonsillitis. There was, however, a severe epidemic of pneumonia and influenza in the city of Aberdeen at the time. All the cases were sporadic; except in one there was no associated injury or illness. The exception was Case VIII., a fish salesman who had just returned to work after being off duty for a fortnight with so-called "influenza."

In all cases the onset was rapid, attended with fever of 100° to 103° F. and shivering. Local symptoms were remarkably constant, viz., severe sore-throat, dysphagia, and very tender cervical glands, which in most of the cases were definitely enlarged. In all there was intense inflammation and œdema of the pharynx with membranous involvement of tonsils, uvula, soft palate, and posterior pharyngeal wall. Macroscopically the exudate was very similar in appearance in each case. Those seen early showed a grey slimy glistening adherent exudate. Soon however there appeared erosion of the mucous membrane with petechiæ and the membranous exudate rapidly became dark and necrotic. Local tissue destruction and sloughing resulted, but there was no characteristic fœtor. In three of the patients respiratory

embarrassment was sufficient to warrant tracheotomy. In ten of the eleven cases there was an associated pneumococcal septicæmia. Only one case recovered; all the others had a rapid and fatal termination.

A throat swab and blood culture were taken on admission in each case but one. The exception was Case III., one of the early cases which died eight hours after admission and in which a blood culture was omitted. This case, however, showed the pneumococcus in the throat in practically pure culture, and had all the typical signs and symptoms. Briefly then the pneumococcus was found as the predominating organism in the throats of all the cases, and all the blood cultures taken showed the presence of an associated pneumococcal septicæmia. Serological examination of the various strains of pneumococci showed that one case was infected with Type I., four cases with Type III., and six with Group IV.

I have to acknowledge my indebtedness to Dr. J. Smith for the bacteriological findings.

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MONOCYTOSIS AND AGRANULOPENIA IN VINCENT'S INFECTION OF THE MOUTH AND THROAT

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POLYMORPH leucocytosis in the blood of adults is in general regarded as the normal and typical response of the body to injury or infection. An absence of this response, however, or an actual polymorph leucopenia, occasionally accompanies infection, and, indeed, is classical in typhoid fever, typhus, measles, and mumps. Leucopenia may also be encountered in conditions of overwhelming sepsis—for example, in osteomyelitis and toxic pneumonia. In such conditions a differential count of the leucocytes may show a relative lymphocytosis, but the actual number of circulating lymphocytes, as a rule, will not be greatly increased. In another group of infective conditions where a similar failure of polymorphonuclear increase is found, there may be an actual increase in the number of circulating lymphocytes, as for example in influenza, whooping-cough, rapidly advancing tuberculosis. Thus polymorph leucopenia with or without lymphocytosis is the common feature in all the above-mentioned conditions.

An increase in the number of circulating mononuclear cells is less frequently met with. True monocytic leukæmia, first described by Reschad and Schilling Torgau, is very rare, but two such cases were recently described in this country by Orr and by Cooke. Mixed lymphomonocytic reactions in the blood are encountered among some of the cases reported in this country as glandular fever and in America as infectious mononucleosis. Similar blood pictures associated with severe ulcero-membranous inflammation of the mouth and pharynx have been described by Friedemann and Elkeles. In some of these cases a very high proportion of monocytes (62 per cent.) has been found. The term monocyte angina has been used to describe them. The organisms predominating in the throat in these cases are the spirillum and fusiform bacillus of Vincent, and the same organisms have not infrequently been recovered in pure culture, in conditions where a similar blood picture is present, but the throat, although inflamed, shows no ulcerative or necrotic lesions. Clinically the presence of enlarged glands, sometimes generalised, has made the exact differentiation of these cases from glandular fever difficult and perhaps even artificial. It is therefore believed that there may be an ætiological relationship between Vincent's infection of the throat and a clinical condition of general glandular enlargement, fever, and splenomegaly, indistinguishable from glandular fever on the one hand, and the so-called monocyte angina on the other. The blood picture may be very similar in both these conditions, but in some cases the leucocyte response is definitely lymphocytic and in others it is monocytic, while in perhaps the majority of cases a mixed lymphomonocyte reaction is encountered. The Vincent's organisms, according to this view, are held to be directly responsible for the peculiar blood reaction, and the treatment and cure of the throat infection results in a restoration of the normal blood picture.

Progressive polymorph leucopenia unaccompanied by increase of the lymphocytes or mononuclear cells has also been described associated with gross tonsillar and pharyngeal sepsis. Agranulocytic angina was so named by Schultz in the belief that the progressive diminution of the number of circulating polymorphs was due to a depression of the granulopoietic bone-marrow by bacterial toxins emanating from the infected throat. Similar blood changes have been observed when the bone-marrow is damaged by other agents—chemical poisons such as benzene, arsenic, or by X rays. A primary (idiopathic) aplasia of the granulopoietic tissue is held to account for some cases of agranulocytosis, and the view is gaining ground that many of the cases of agranulocytosis secondary to infection are really due to primary bone-marrow disorder with reduction of the polymorph leucocytes, which is then followed by local or general infection.

To summarise from the point of view of the changes in the numbers of the circulating leucocytes: failure of polymorphonuclear leucocytosis in infection may be accompanied by lymphocytosis or monocytosis, or the failure may be progressive, leading to an actual disappearance of the granular leucocytes without notable disturbance of the proportions, lymphocytes, or monocytes.

CASE RECORD

The case now to be described is of interest because a Vincent's infection of the mouth and pharynx was accompanied by a marked monocytosis in the blood, and this was followed by a severe granulopenia. The latter responded to pentose nucleotide therapy and the patient recovered.

The patient, a woman school teacher aged 25, complained that for several weeks she had been easily

exhausted. The more acute phase of her illness began two days before she was first seen, with general malaise, cold shivers, and more intense weakness, the temperature being 99° F. and the pulse-rate 90. At this time she was subject to attacks of blanching of the skin which caused her to look ill and wretched, without, however, any special subjective symptoms. She continued thus for two days when I first saw her. The principal clinical finding was a marked fœtid gingivitis around the right lower three molars. This had been observed to commence beneath a overhanging flap which partly enveloped the last incompletely erupted molar tooth. The tonsils and fauces appeared slightly red; the lymphatic glands of the right anterior and posterior triangles in the neck were enlarged and tender, especially those about the middle third of the sternomastoid and in the right sub-

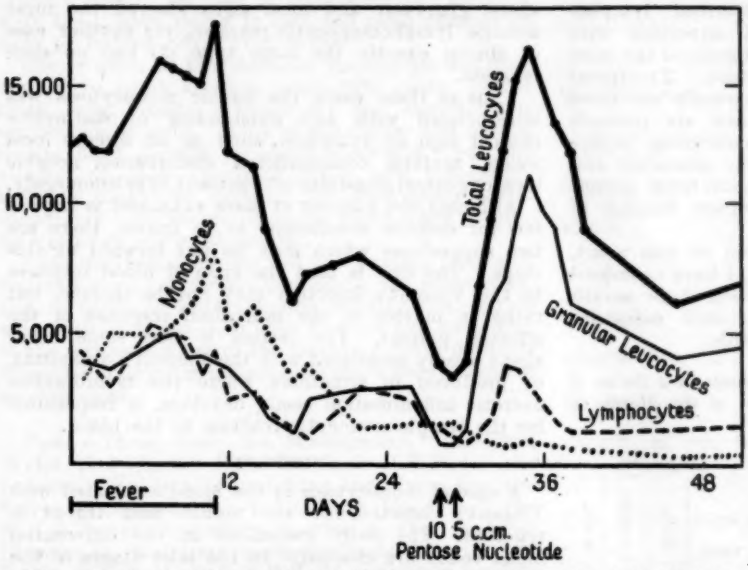

Chart showing the daily variations in the proportions of leucocytes. The effect of pentose nucleotide on the granular cells is clearly seen.

maxillary region. Enlarged and slightly tender glands could also be made out in the left posterior triangle and in the right axilla and groin. The spleen was not palpable, and nothing abnormal could be found elsewhere. The temperature was 100°, the respirations 22, and the pulse 94. Examination of the blood showed the presence of a slight leucocytosis (12,000), in part due to an actual increase in the lymphocytes (4200), but chiefly to an increase in the large mononuclear cells (3360). The polymorphs were actually slightly reduced (4080). The state of the blood at this time and the subsequent changes can best be studied from the accompanying chart. The blood Widal reaction now tested proved to be negative, and the provisional diagnosis was glandular fever. The next day severe epistaxis commenced, and the bleeding continued for two days. The source of the bleeding was the septum, and when other measures appeared unavailing the anterior nares were plugged. Immediately following this the uvula and tonsillar region was observed to be œdematous and inflamed. Within 24 hours, possibly aided by the stagnant blood clot in the posterior naso-pharynx, a widespread membranous inflammatory lesion developed, covering the whole of the visible pharynx and having the typical fœtid odour of a Vincent's infection, direct smears being positive.

The patient was now admitted to the Leeds Public Dispensary and Hospital and intensive local treatment was instituted. In the course of this treatment considerable areas of necrotic and membranous tissue were dislodged. The temperature became normal within a week, and after another four days the throat was almost clean except for two deep excavated ulcers upon the right tonsil. The general condition of the patient was much improved, but a disquieting feature now became apparent upon examination of the blood. The polymorphonuclear cells were becoming fewer, and were actually about one-fifth of their normal complement. They began to increase a little on the twenty-second day of the illness, and it was now hoped that a steady improvement would be maintained, but an even more severe leucopenia now began to develop. This, as shown in the chart, was due almost entirely to a reduction in the granular polymorphs. The number of these cells ultimately fell below 1000 per c.mm., and at this stage it was decided to institute pentose nucleotide therapy.

Ten c.cm. of Nucleotide K 96 was given intramuscularly, followed by 5 c.cm. the next day. The result was dramatic in its rapidity and completeness, for within four days the number of polymorphs was raised to just above normal and the increase continued for another four days, then slowly falling to normal. Meanwhile the large mononuclear cells had been slowly diminishing in numbers, and this was apparently quite independent of the variations in the granular polymorphs. The lymphocytes had been slightly increased, with the increase in the polymorphs, but proportionately much less. It was noteworthy that when the leucopenia was most marked the patient was not unduly distressed; there was no alteration in the temperature or other observable clinical phenomena to indicate the possible seriousness of the condition.

COMMENT

The interest of this case lies in the series of unusual changes in the numbers of circulating white cells which accompanied and followed the Vincent's infection of the throat.

The increase in the number of monocytes was present from the earliest moment of examination, two days after the onset of the acute phase of the illness. At this time the Vincent's infection was limited to the right gingival margin of the lower jaw, but there was enlargement of the lymphatic glands of both sides of the neck of the right axilla and groin. The monocytosis was maximal on the fourteenth day and thereafter it gradually diminished and the changes appeared to be independent of the changes in the numbers of the other white blood corpuscles. A normal level was reached four weeks after the onset of the illness. As a rule the monocyte cell was easily identified in ordinary films stained with Leishman or Giemsa's stain, but in a few cells the morphological characters were indefinite and they could not be definitely classified as large lymphocytes or monocytes. These cells, which never exceeded 8 per cent., were called lymphomonocytes, and for charting purposes have been equally divided between the lymphocytes and the monocytes. The majority of the monocytes gave a faintly positive oxydase reaction.

The granulopenia which, in time, followed the monocytosis was, strangely enough, unrelated to the most acute phase of the throat infection, the polymorphonuclear cells were in fact most markedly diminished some two weeks later. The rapid response to pentose nucleotide therapy may suggest that it was a benign secondary agranulopenia and that spontaneous recovery was about to occur independently.

Finally there is the question of how far the intense

Vincent's infection was responsible for the remarkable series of blood changes. Bacteriologists are reluctant to attribute any specific blood changes to these organisms. They are proverbially difficult to obtain in pure culture and the experimental work to settle the matter is, on the whole, indefinite or unsatisfactory. Smith, however, states that by injecting "fuso-spirochætal material" into rabbits he has been able to produce the typical blood picture of glandular fever and, with larger doses, that of agranulocytosis. The frequent occurrence of these organisms in almost pure culture in the throats of cases of glandular fever, especially those with definite inflammatory lesions has been noted by Downy and McKinlay, Cottrell, Williams, and others. Friedemann and Elkeles, as already mentioned, have described lymphomonocytic reactions in the blood associated with Vincent's infection of the throat and some of the cases had widespread glandular enlargement. Treatment with intravenous neosalvarsan apparently cut short the disease. Baldridge, however, saw six patients develop glandular fever while undergoing active antisyphilitic treatment with organic arsenicals and therefore believes that true glandular fever cannot be due to the spirochæte and fusiform bacillus of Vincent.

In order to gain more information on this point, whenever the opportunity presented, I have examined the blood of cases of Vincent's infection of the mouth or pharynx. The details of eight such cases are summarised in the accompanying Table.

Table showing the Differential Blood Counts in a Series of Eight Cases of Vincent's Infection of the Mouth or Pharynx

No.	Sex and age.	Lesions.	Constitutional disturbance.	Glands.	Day.	Leucocytes. Total.	Poly.	Lympho.	Mono.
							Per cent.		
1	F. 17	Tonsils, pharynx.	+ +, temp. vom.	Bilat., cerv.	5	12,800	50	29	21
					9	9,800	62	24	14
2	M. 24	,,	+ +, ,,	,,	6	12,000	53	30	17
					7	15,200	34	34	32
					10	11,900	48	32	20
					14	7,900	69	24	7
3	M. 27	,,	+ +, ,,	,,	4	13,400	72	24	4
4	F. 35	,,	+, temp.	Sl. bilat.	6	10,400	64	22	14
5	F. 17	Gingivitis.	+, ,,	Sl. unilat.	4	8,800	74	21	5
6	F. 19	,,	Sl. temp.	,,	3	10,100	72	22	6
7	F. 32	,,	Slight.	Unilat.	3	6,900	66	20	14
					12	7,400	62	24	14
8	M. 8	,,	,,	,,	4	6,800	65	28	7

Bilat. cerv.—bilateral, cervical.

With one exception all the cases were adults, four of them had a severe Vincent's gingivitis with constitutional disturbance, three of them had notable unilateral lymphatic glandular enlargement, while in the fourth there was only slight glandular swelling. The four other cases had a membranous or ulcerating inflammation of the tonsils and pharynx, one almost as severe as in the case reported above in detail. All four had bilateral glandular swellings in the neck, all were severely ill for at least a day or two with considerable temperature, three had abdominal symptoms with diffuse epigastric pain and vomiting. In no case was the spleen palpable.

From the Table it will be seen that a lymphomonocyte reaction in the blood was by no means constantly encountered, and in three cases (3, 5, 6) the change was that of a slight polymorph leucocytosis. In two cases (1 and 2) there was a moderate increase in the monocytes and to a less extent the lymphocytes at the actual number of polymorphs being very little disturbed. In two other cases (4 and 7), except for a slight increase in the mononuclears, the relative proportions were not significantly altered. In the child aged 8 years the blood count was not abnormal. Although two of the cases with most severe constitutional glandular and local signs showed the most definite lymphomonocytic reaction, yet another case of almost exactly the same type (3) had no such reaction.

Thus in these cases the hæmic monocytosis was unassociated with any outstanding or distinctive clinical sign or symptom, such as an intense local lesion, marked constitutional disturbance, notable local or general glandular enlargement, or splenomegaly.

Although the number of cases examined is far too few for definite conclusions to be drawn, there are two suggestions which may be put forward at this stage. The first is that the type of blood response to the Vincent's infection may not be specific, but rather a matter of the individual response of the affected patient. The second is that some other agent closely associated with the Vincent's organisms, or produced in situations where the membranous necrotic inflammation easily develops, is responsible for the lymphomonocytic reaction in the blood.

SUMMARY

A case of monocytosis in the blood associated with Vincent's infection of the mouth and throat is reported. The daily variations in the differential blood count are charted. In the later stages of the illness a severe granulopenia developed which quickly responded to pentose nucleotide therapy. The examination of the blood of eight other cases of Vincent's infection has been made. Of these two had well-marked monocytosis, two slight monocytosis, three had polymorph leucocytosis, and one showed no significant changes.

I am indebted to my colleagues Mr. A. Gough and Mr. A. Sharp, and to Dr. T. Talmage Read, warden, the School of Dentistry, Leeds, for referring cases of Vincent's infection to me.

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BATH ROYAL UNITED HOSPITAL.—The 137th annual report records that since 1930 a new hospital has been erected at a cost of £154,000, an accumulated deficit of £13,112 has been wiped out, and the first year in the new building has ended with a small surplus of income over expenditure. There were 2821 in-patients, who stayed on an average 18·64 days, as against 15·8 in the preceding year. The daily average of occupied beds was 143·68, as against 119·8.

A COMPARISON OF TESTS FOR SYPHILIS

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IN 1931 an investigation was begun at the Lancashire County Mental Hospital into the relative values of the Wassermann, Sachs-Georgi, Sachs-Witebsky, Meinicke, Müller, and Kahn tests for syphilis. Many varieties of techniques and methods were tried (over thirty in all), the total number of tests performed being over 20,000.

One or other of the Meinicke micro-tests was first applied to comb through some 2500 cases, 800 of these being finally selected for the simultaneous application of tests. Some of the earlier and partial results have already appeared elsewhere,[1] but the number of cases examined being now sufficiently large to make the drawing of conclusions correspondingly more secure, it seems worth while to give here some of our total results.

Unfortunately, however, all the various tests and methods were not always applied to the same cases, and in order to obtain figures strictly comparable with each other we shall have to limit our discussion to the results of a few of the more important methods (nine) as employed *simultaneously* and *without exception* on 600 cases.

SERA

Tests.—These were the Wassermann[2] (modified Wyler No. 1); the Meinicke Macro-M.K.R. II., the Indirect micro-test derived from the Macro-test, the Direct micro-test done from finger blood, and the M.K.R.Z. or centrifuge method; the Modified (Burroughs Wellcome method) Sachs-Georgi; the Müller M.B.R. II. and M.B.R.Z. (centrifuge modification); and the Routine Kahn.

Cases.—The 300 syphilitic cases included 19 congenital syphilitics, 99 old, treated, and latent cases, 7 tabetics, 3 tabo-paretics, 45 general paralytics, and 13 cases of meningo-vascular syphilis, all these neurosyphilitics being untreated cases. In addition, there were 56 treated paralytics examined up to three years after malarial therapy, 52 paralytics from three to ten years after malaria, and 6 other treated neurosyphilitics. The negative controls also numbered 300.

Results.—Table I. gives the numbers and percentages of each kind of result recorded.

In order to estimate the importance of the differences observed between the various tests, Table II. has been drawn up, showing which differences were significant and which not, in respect of absolute sensitivity and relative specificity. The reason why we have tabulated *absolute* sensitivity and *relative* specificity is because in the event of an unknown case giving a "doubtful" reaction the patient is usually given the benefit of the doubt, these "doubtfuls" therefore swelling the number of *incorrect* results in syphilitics and of *correct* results in non-syphilitics.

Comments.—The sensitivity of the Routine Kahn seems to be worst in congenital cases, while the Sachs-Georgi and Wassermann are particularly poor with treated cases. The two false positive Wassermanns could not be confirmed by any evidence of syphilis; in one of these cases an M.K.R. test gave a very weak positive which was definitely negative on repeating.

TABLE I.—*Results on 600 Sera*

Tests.	Syphilitic sera (300).			Negative controls (300).		
	Positive results.	Doubtful results.	False negatives.	Negative results.	Doubtful results.	False positives.
	Number and per cent.					
Macro-M.K.R. II.	245 (81·7)	24 (8·0)	31 (10·3)	286 (95·3)	4 (1·4)	10 (3·3)
Indirect micro-M.K.R. II.	271 (90·3)	14 (4·7)	15 (5·0)	259 (86·3)	30 (10·0)	11 (3·7)
Direct micro-M.K.R. II.	268 (89·3)	15 (5·0)	17 (5·7)	262 (87·3)	25 (8·4)	13 (4·3)
M.K.R.Z.	262 (87·4)	10 (3·3)	28 (9·3)	282 (94·0)	13 (4·3)	5 (1·7)
M.B.R. II.	252 (84·0)	19 (6·3)	29 (9·7)	281 (93·7)	14 (4·6)	5 (1·7)
M.B.R.Z.	256 (85·3)	21 (7·0)	23 (7·7)	279 (93·0)	15 (5·0)	6 (2·0)
Routine Kahn	247 (82·3)	19 (6·3)	34 (11·4)	300 (100·0)	0 (0·0)	0 (0·0)
Sachs-Georgi	230 (76·7)	21 (7·0)	49 (16·3)	282 (94·0)	12 (4·0)	6 (2·0)
Wassermann	198 (66·0)	20 (6·7)	82 (27·3)	297 (99·0)	1 (0·3)	2 (0·7)

TABLE II.—*Significance of Differences Observed on Sera*

Tests.	Macro-M.K.R. II.	Indirect micro-M.K.R. II.	Direct micro-M.K.R. II.	M.K.R.Z.	M.B.R. II.	M.B.R.Z.	Routine Kahn.	Sachs-Georgi.	Wassermann.	Differences in—
Macro-M.K.R. II.		+1	+1	+½	+0	+½	+0	−½	−1	ABSOLUTE SENSITIVITY
Indirect micro-M.K.R. II.	−0		−0	−½	−1	−½	−1	−1	−1	
Direct micro-M.K.R. II.	−0	−0		−0	−½	−½	−1	−1	−1	
M.K.R.Z.	+½	+½	+½		−½	−0	−½	−1	−1	
M.B.R. II.	+½	+½	+½	—		+0	−0	−1	−1	
M.B.R.Z.	+0	+½	+½	−0	−0		−0	−1	−1	
Routine Kahn	+1	+1	+1	+1	+1	+1		−½	−1	
Sachs-Georgi	+0	+½	+½	−0	−0	—	−1		−1	
Wassermann	+1	+1	+1	+½	+½	+½	−½	+½		
Differences in	RELATIVE SPECIFICITY									

EXPLANATION OF TABLE II

Small differences between any two test results may be due to chance, and mathematical treatment is necessary in order to determine which of these differences are really significant and therefore sufficiently reliable for the drawing of conclusions. Not only does the significance of

[1] Jour. Ment. Sci., 1931, lxxvi., 321; 1932, lxxviii., 96; 1933, lxxix., 54. Amer. Jour. Syph., 1931, xv., 496. Brit. Med. Jour., 1932, i., 749. Brit. Jour. Derm. and Syph., 1932, xliv., 305; 1933, xlv., 179. Board of Control Reps. for 1931 (Part 2, p. 112), and 1932 (Part 2, p. 48). Urol. and Cut. Rev., 1932, xxxvi., 798; 1933, xxxvii., 427.

[2] Done for us at the Manchester University public health laboratory.

a difference depend upon its actual magnitude and upon the size of the series in which it was observed, but it also varies with the "zone" in which it occurs; thus, other things being equal, the difference between 70 and 75 per cent. is always less significant than the difference between 90 and 95 per cent.

Table II. is based on the principle of standard deviations. If the actual difference was less than the standard deviation, it has been classed as "insignificant"; if more than once but less than twice the standard deviation, as "suggestive"; and if more than twice the standard deviation, as "significant," the standard deviation being ascertained from the following formula:—

$$\sigma \text{ diff.} = \sqrt{\frac{p'q'}{n'} + \frac{p''q''}{n''}}$$

where p', p'' are the two percentages, q', q'' the differences between these percentages and 100, and n', n'' the number of cases that these percentages represent.

For example, take the difference in absolute sensitivity between the Routine Kahn and the Wassermann. This is 82·3 per cent.—66 per cent., or 16·3. The standard deviation is:—

$$\sqrt{\frac{82{\cdot}3 \times 17{\cdot}7}{247} + \frac{66 \times 34}{198}} = \sqrt{5{\cdot}89 + 11{\cdot}33} = \sqrt{17{\cdot}22} = 4{\cdot}15$$

The actual difference of 16·3, being more than twice 4·15, is therefore mathematically significant.

In the Table, differences in absolute sensitivity are grouped above and to the right of the diagonal, and differences in relative specificity below and to the left. The signs + and − indicate whether the difference under consideration is in favour of (+) or against (−) the test that appears (in the case of sensitivity) at the top of the column or (in the case of specificity) at the left of the row. A "—" indicates that there was no difference. If the difference was insignificant it is expressed by a "0," if suggestive by a "½," and if significant by a "1."

In view of the recent discussions concerning the increase in Wassermann sensitivity resulting from doing the test in dilutions of 1/1, 1/2, 1/3, and 1/4, as well as the usual 1/5, 1/10, &c., we should state that even before such a procedure was much advocated we had had results returned as positive in the stronger dilutions. Thus, of the 200 positive results quoted here, 15 were positive 1/5, 11 positive 1/4, 8 positive 1/3, and 1 positive 1/2, two of these positives (1/3 and 1/5) occurring in non-syphilitic cases. Of the doubtfuls reported here, one was "anticomplementary," 12 were doubtful 1/1, and 8 were doubtful 1/2, the one occurring in a non-syphilitic being a 1/2.

In connexion with the false positive Meinicke results, one important source of fallacy must be pointed out. As mentioned earlier, a Meinicke test was applied to some 2500 cases. Now, practically all the cases giving positives and doubtfuls were included in the 800 series for comparison of tests; in other words, the smaller, 800 series of necessity includes all the false positives obtained from combing out the larger, 2500 series. But the *percentage* of false positives given here is based on the 300 non-syphilitics in this series; and as the total number of non-syphilitics in the 2500 series must have been in the neighbourhood of 1800 or 2000, it would appear that the unspecificity of the Meinicke reactions as given here is likely to be five or six times too high. This factor does not affect the other tests, because for them the 800 series was unselected, none of these other tests having been used for preliminary combing out.

We might mention here that on some 360 cases the *Presumptive* Kahn was used as well, and the results with this test will form the subject of a future communication. All that can be said so far is that the test appears at least as sensitive as the best Meinicke reactions, but that, like them, it tends to give a few false positive results.

FLUIDS

Tests.—The tests used on fluids (six) were the same as those for sera, with the exception of the two micro-M.K.R. tests and the centrifuge M.K.R.Z. In the case of the Routine Kahn, the globulins were invariably concentrated first, and all the "plus-minus" results were returned as negative.

Cases.—The fluids examined were unfortunately less numerous than the sera. The 180 syphilitic fluids were obtained from 6 tabetics, 3 tabo-paretics, 45 paralytics, 13 meningo-vascular syphilitics (all untreated), and from 56 paralytics examined up to three years after malarial therapy, 51 paralytics from three to ten years after malaria, and 6 other treated neurosyphilitics. The negative controls were from 70 syphilitics with no nervous involvement and 130 non-syphilitic cases, 200 in all.

Results.—The results are given in Tables III. and IV. in the same way as for sera.

TABLE III.—*Results on 380 Fluids*

Tests.	Syphilitic fluids (180).			Negative controls (200).		
	Positive results.	Doubtful results.	False negatives.	Negative results.	Doubtful results.	False positives.
	Number and per cent.					
Macro-M.K.R. II. .	89 (49·4)	16 (8·9)	75 (41·7)	198 (99·0)	1 (0·5)	1 (0·5)
M.B.R. II. ..	120 (66·7)	8 (4·4)	52 (28·9)	200 (100·0)	0 (0·0)	0 (0·0)
M.B.R.Z.	134 (74·5)	17 (9·4)	29 (16·1)	195 (97·5)	4 (2·0)	1 (0·5)
Routine Kahn ..	159 (88·3)	0 (0·0)	21 (11·7)	199 (99·5)	0 (0·0)	1 (0·5)
Sachs-Georgi ..	89 (49·4)	27 (15·0)	64 (35·6)	197 (98·5)	2 (1·0)	1 (0·5)
Wassermann ..	126 (70·0)	8 (4·4)	46 (25·6)	199 (99·5)	1 (0·5)	0 (0·0)

TABLE IV.—*Significance of Differences Observed on Fluids*

Tests.	Macro-M.K.R. II.	M.B.R. II.	M.B.R.Z.	Routine Kahn.	Sachs-Georgi.	Wassermann.	Differences in—
Macro-M.K.R. II.	\	+1	+1	+1	—	+1	ABSOLUTE SENSITIVITY
M.B.R. II.	+½	\	+½	+1	−1	+0	
M.B.R.Z.	—	−½	\	+1	−1	−0	
Routine Kahn	—	−½	—	\	−1	−1	
Sachs-Georgi	—	−½	—	—	\	+1	
Wassermann	+½	—	+½	+½	+½	\	
Differences in	RELATIVE SPECIFICITY						

Explanations as for Table II.

Comments.—The lack of sensitivity of the Meinicke test was very evident. The one false positive given by the Kahn occurred in a case whose fluid was

otherwise completely negative, whose blood was negative too except for a *Presumptive* Kahn, but who gave a history of syphilis and had a tertiary ulcer of the palate.

The false positive M.B.R. Z. occurred in a syphilitic case that showed no nervous involvement and whose fluid was otherwise completely negative except for a slight change in the colloidal gold curve. The test gave a "doubtful" in a case that showed no other change in the fluid and had a blood that was negative to all tests, giving, however, a "doubtful" Wassermann. It also gave "doubtful" results in a case with one "doubtful" blood Meinicke, in another case with congenital syphilis and a weakly positive blood but no other fluid changes, and in one completely negative non-syphilitic.

The "doubtful" Wassermann in control fluids was an "anticomplementary" as were 3 out of the 8 "doubtfuls" in neurosyphilitic fluids.

CONCLUSIONS

Of the nine tests applied simultaneously to 600 sera, the Wassermann was the most deficient in sensitivity (66 per cent.), with the Sachs-Georgi next, the best being the Meinicke reactions with a sensitivity of 81·7 to 90·3 per cent. The only completely specific test was the Routine Kahn, the Wassermann giving 0·7 per cent. false positives and the M.B.R. II. 1·7 per cent., with higher figures still for the other tests, some of the Meinicke reactions giving as many as 3 to 4 per cent. These last, however, would seem likely to be more specific on an unselected series than they would appear from the figures given here. (See earlier comment on this point.)

Of the six tests applied simultaneously to 380 fluids, the most sensitive was the Kahn (88·3 per cent.), while the Wassermann was much less so, being about equal to the M.B.R. II. and M.B.R. Z. combined, 66·7 to 74·4 per cent. The Meinicke and Sachs-Georgi were very inferior with a sensitivity of 49·4 per cent. The Wassermann and M.B.R. II. were both completely specific, the other tests each giving 0·5 per cent. false positives.

In view of the fact that the Wassermann test on blood is the most difficult of those here discussed, while being the least sensitive and not the most specific, one can but deplore that there should be such a desperate clinging to the Wassermann even to-day, especially in public medicine. When the Meinicke and Presumptive Kahn are so eminently suitable for exclusion purposes, while the Routine Kahn is so reliable for diagnostic ends—to say nothing of the very reasonable efficiency of the Müller reactions—it seems very pointless to deny these tests at least as official a recognition as has been accorded in the past to a far less efficient test. Even for spinal fluid examinations the Müller is as good as the Wassermann, while the Kahn is vastly superior.

We are indebted to Dr. F. M. Rodgers, the medical superintendent, for permission to publish these results.

HOSPITAL COÖPERATION AT BURNLEY.—For several years the long waiting-list of the Victoria Hospital, Burnley, was one of the most difficult problems of the board of management. In the hope of reducing the difficulty, the board in March, 1932, arranged with Burnley corporation for the admission of some of the waiting patients into the municipal hospital at Primrose Bank. The arrangement has resulted in reducing the waiting-list from 402 at the end of November, 1932, to 189 in November, 1933.

TRANSPLANTATION OF LIVING GRAFTS OF THYROID AND PARATHYROID

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IN spite of failures in the past to secure successful cross-grafts of endocrine tissues, an attempt at such cross-grafting has been repeated using a different technique from that previously employed. A certain measure of success has been attained in these experiments which are still continuing, and the present report is in the nature of a preliminary statement of work that is still in progress. These experiments have continued for a period of over three years, and certain conclusions have been reached which may be briefly stated.

There are at least three factors recognisable in the problem of successful cross-grafting. There is a probable fourth factor, and there may be many others not yet determined. The first factor concerns the selection of a proper site for the implantation of the graft. A great many experiments, most of which failed, have led us to think that the requirements of a proper location for the graft may be described as follows. The tissue into which the implant is made should be close to blood-vessels, so that it may develop an organised circulation in a short time, but the tissue itself should not be highly vascular because hæmatoma-formation about the graft will prevent it taking. The tissue should be loose in structure, without a firm capsule, such as solid organs have, or a sheath like muscles have. It should be easy of access, and should not be in an area where the operation would interfere with function. All of these qualities are met by the normal areolar tissue of the groin or axilla, and in these positions the best success has been obtained with the grafts.

The second factor concerns the form and size of the grafted material. We are convinced that many grafts in the past have failed because the grafts were too gross in size. During the period before the establishment of an organised blood-supply, the implant has to live by osmosis and diffusion with the surrounding fluids. These physical forces probably are only available to the outermost layer of cells. The central portion of large grafts undergoes necrosis, and this imperils the success of the graft as a whole. We are convinced that only very small fragments or, better still, the spreading sheets of cells to be found in tissue culture possess the proper physical qualities to give the best chances of survival.

The third factor concerns the adaptation of the graft to the chemistry of its host. There is no doubt that unfavourable biochemical reactions between graft and host will destroy implants even though the other factors of location and size are favourable. We have attempted to secure at least a partial adaptation by growing the graft in tissue culture for a period of from two to four weeks before its implantation on a medium composed in part of serum and plasma from the animal that is later to receive the graft.

The fourth factor which may exert an influence on the survival of the graft is the existence of a state of deficiency causing a physiological need of

the tissue to be grafted. Halsted, who did a large series of experiments on this same problem years ago, believed that no graft would succeed if the host animal already had an adequate supply of the tissue which was being implanted. We are not assured that this law is universally true but have created a deficiency in all of our cases.

The result of our experiments to date may be briefly summarised as follows. We have secured cross-grafts of thyroid and parathyroid tissue which when removed seemed to be entirely healthy and growing vigorously at varying periods from 21 to 80 days after the implantation. There have been a great many failures but the proportion of success has been sufficient to show that cross-grafting of these endocrine glands is possible when all the conditions of the experiment are favourable. The method has been applied to two cases of human parathyroid tetany and four cases of thyroid deficiency. One of the tetany cases has gone a year since the first graft and the other seven months. Both of them are entirely well clinically, and their blood calcium has returned to normal from a low level of 4·6 and 6·2 mg. per 100 c.cm. respectively in these two cases. The thyroid cases are too recent to make any report on, and are being watched with great interest at the present time.

In conclusion we may say that although there are still many failures in our experiments with animals, and there are no doubt important elements of the technique still to be refined and improved, nevertheless we have definitely proved the possibility of cross-grafting endocrine tissues, not only between dog and dog but between human being and human being.

The details of the technique of tissue culture for these grafts of endocrine glands follow, in general, the principles well established for the growth of mammalian tissue. A small fragment is placed, under sterile conditions, on a coagulated medium, and kept in a thermostat until it begins to liquefy the surrounding medium by its growth and chemical activity. It is then transplanted to a new culture medium. In actively growing tissues this may have to be done every second to fourth day. The medium consists of Tyrode's solution with extract of beef embryo as a stimulating substance, and serum and plasma derived from the animal in which the graft is to be placed. The proportions of these different constituents have been modified slightly from time to time but enough serum and plasma to form a coagulum of fibrin is always used. Certain tissues removed from human beings have not grown well but, in general, the grafts have grown on the culture medium in a satisfactory way, and nearly all of the animal grafts have grown successfully in culture. The animals employed have been dogs exclusively, and the glands worked with to the present time have been only the thyroid and parathyroid. The technique is being modified in different series of experiments in an effort to secure a higher percentage of successful grafts. We hope in the future to extend the same principle to other endocrine glands and also to try grafting across species lines.

CLINICAL AND LABORATORY NOTES

LAMPLIGHTER'S THUMBS

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Seven nights a week for 35 years an old lamplighter had carried his "pole," lighting, on the average, 90 gas lamps in the streets of the city every night. For the first 28 or 29 years his pole was of wood—a rounded rod—1½ in. thick, surmounted by a metal "torch," and weighing about 12 lb.; for the last six or seven years, however, it was of steel, ¾ in. thick, but the weight was about the same. Carried sometimes in one hand, sometimes in the other (but most often in the right), the actual lighting of the lamp was done by gripping the pole firmly with one or other hand—or with both, if the weather was boisterous—and striking the gas stopcock upwards with the end of the upright pole. Frequently the blow had to be given with considerable force before the stopcock would yield. In the course of his working life he must have delivered in this manner well over a million blows.

At a later hour every night he put each lamp "half-out," and at daybreak he put each one "out." To do so he carried around, in the same way, another wooden pole, 1½ in. thick but about 7 or 8 lb. in weight, with a hook at the end by means of which he pulled the gas stopcock downwards. This act must have been performed over two million times in his 35 years work. Little wonder, then, that the old lamplighter should show the stamp of his profession—in other words, the impress of his pole—on his thumbs.

He had been retired from work for about two and a half years when, at the age of 66 years, he came under observation, consequently the epidermal evidences of toil had to a large extent disappeared from his hands. Bony evidences, however, persisted. Both hands showed the same deformity but the changes were a trifle more marked in the right.

Each thumb showed great enlargement, with partial dislocation, of the metacarpo-phalangeal and

FIG. 1.—Shows the characteristic deformity of the lamplighter's thumbs in the first case.

interphalangeal joints, hour-glass thinning of the proximal phalanx, and eversion of the distal. The interphalangeal joint was the more markedly enlarged and the terminal phalanx was everted at an angle of about 40°. On the inner side of the interphalangeal joint the epidermis was thickened to form a callosity about the size of a sixpence. Very slight crepitus could be felt in the metacarpo-phalangeal joint of the right thumb only, and movements at all joints were quite free and painless and the grip was good.

On *radiological examination* the shaft of the everted terminal phalanx was seen to taper distally, but its base was spread out, showing well-marked bony overgrowth

at each side, and was slightly displaced outwards. The distal end of the first phalanx was spread out in a mushroom-shaped fashion owing to very considerable and irregular bony overgrowth having taken place from its under and lateral aspects, and it appeared that this bony excrescence was chiefly responsible for the great enlargement of the joint. The shaft of the first phalanx showed narrowing and condensation near the junction of its middle and distal thirds, and its inner border was more concave than its outer no doubt from the pressure of the pole. The proximal end of the first phalanx was somewhat enlarged and displaced inwards and forwards at the metacarpo-phalangeal joint. The two sesamoid bones on the under surface of the distal end of the first metacarpal bone appeared to be unduly large.

FIG. 2.—Radiographic appearances (see text).

The first phalanges of the index and middle fingers of each hand showed some condensation about the middle of their shafts, surrounded by periosteal thickening, but the joints were unaffected.

No evidence of arthritis was found elsewhere in the body. There was no very obvious arterio-sclerosis and the Wassermann and Kahn tests were negative in the blood and cerebro-spinal fluid.

Another old city lamplighter who had carried his pole nightly for 26 years showed a similar deformity of his thumbs—viz., enlargement and partial dislocation of the metacarpo-phalangeal and interphalangeal joints, hour-glass atrophic narrowing of the proximal phalanx, and eversion of the terminal. This eversion, however, was only evident in the right, and this may be due to the fact that, during the eight years immediately preceding observation, he had been working as a street-sweeper and not following his old occupation of street lamplighter. No crepitations could be felt in any of the joints, movements were quite free, and the grip good.

Radiological examination revealed changes similar to those in the first case, except that the extensive mushroom-shaped overgrowth of bone at the distal end of the first phalanx was not present. This may be because he had been employed as a lamplighter for a shorter period—26 years as against 35 years. He had carried the 1¼ in. thick wooden pole for 24 years and the ⅞ in. thick steel pole for two years. He showed no evidence of arthritis elsewhere and no arterio-sclerosis.

The general appearance of the thumbs were the same in both cases, and on looking at them, even casually, the deformity was very striking. It would appear that old lamplighters, who have had long service with the pole, are quite familiar with the outward changes brought about in their thumbs; although, of course, they never give the question a thought.

AN ABNORMAL REACTION IN CENTRIFUGALISED BLOOD*

By Dr. Grete Cohn

MEDICAL DIRECTOR OF THE SANATORIO PREALPINO, CAVASO DEL TOMBA, TREVISO, ITALY

When citrated blood is centrifugalised the line of separation between red cells and plasma is sometimes distinct and clear while at other times an intermediate layer takes its place. In examining the blood of healthy and tuberculous persons, I have regarded the presence of an intervening layer as an abnormal reaction and have endeavoured to relate this to the erythrocyte sedimentation test.

I describe the reaction as *negative* if there is a clear line between the plasma and the red cells after centrifugalisation for five minutes. I have found this negative reaction in healthy people, in those suffering from mild tuberculosis, and in those with an efficient pneumothorax, with fibrous, closed forms of tuberculosis, or with good general condition and good prognosis.

I speak of a *slightly positive* reaction when the intermediate layer (which may range in colour from dark raspberry red to orange) has a depth of 2–5 mm. I find that this usually appears when the disease is of slow evolution or of ulcerating fibrous type, or when there is an inefficient pneumothorax.

A *strongly positive* reaction is when the intermediate layer is from 8 to 20 mm. in depth; in such cases the patient is usually in a grave general condition or has a rapidly evolving type of disease.

Comparing the results with Westergren's sedimentation test I found that cases with a negative reaction to my test had low sedimentation values (2 to 15 mm. in an hour); weakly positive reactions had Westergren values of 20 to 30 mm., and strong positive reactions showed high Westergren values of 45 mm. or more.

To show that the depth of the intermediate layer does not depend on the amount of centrifugalisation, I made a second series of experiments in which I interrupted the centrifugalisation every minute or every other minute. In those patients who gave a negative reaction there was never any appearance of an intermediate layer, but in the other cases this layer began to appear in two or three minutes and reached its maximum depth after four or five minutes. It began to diminish after seven or eight minutes, becoming more compact and homogeneous, until finally a distinct line of separation between the plasma and the red cells reappeared (inversion of the reaction). In strongly positive cases this inversion appears very quickly and the line of separation has become distinct again after four minutes. In only 3 out of 80 cases did the result of the reaction correspond neither to the clinical study nor to the sedimentation test. The test thus gave a reliable indication in 86 per cent. of cases.

The *technique* is the same as that for the Westergren sedimentation test. I use 0·5 c.cm. of 5 per cent. sodium

* Based on a communication to the Federazione Fascista per la lotta contro la tuberculosi.

citrate and 1·5 c.cm. of blood. The citrated blood is put into small glass tubes 6 cm. in length and 2·5 mm. in diameter. The tubes are centrifugalised with a hand-worked apparatus. This is necessary because if an electric centrifuge were used the reaction would appear too quickly, and it would be impossible to observe its single phases.

Under the microscope the intermediate layer is found to consist of leucocytes, thrombocytes, destroyed red cells, and protein deposit. The positive reaction is presumably due to the same factors as are responsible for rapid sedimentation. Fahraeus, studying blood in rigid non-capillary tubes, observed that corpuscles of greatest volume tend to join the axial current which proceeds with the greatest velocity. The corpuscles of highest volume in the blood would normally be the leucocytes, but in pathological states, in which the red cells tend to agglutinate, these red-cell aggregates would have greater volume than the single leucocytes, and would therefore pass downwards in the axial current, leaving behind them the leucocytes and thrombocytes which will thus form the intermediate layer.

The interest of the reaction I describe lies in its rapidity and its simplicity. Further work is required to perfect it. It is, of course, without any specific value in tuberculosis, but indicates the state of resistance of the organism. It has generally proved positive—usually strongly positive—in cases of syphilis with healthy lungs, and also in pregnancy.

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DIAPHRAGMATIC HERNIA IN AN INFANT

By GEOFFREY H. GREENWAY, M.R.C.S. Eng.
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A MALE child, aged 16 days, was admitted to the Belgrave Children's Hospital, Kennington, on Nov. 5th, 1932, with a history of progressive loss of weight since birth, associated with "blue turns" and the passage of blood per rectum.

CLINICAL HISTORY

The mother stated that her baby had been born at full term after a labour lasting about three hours, and weighed 8 lb. 6 oz. at birth. On admission to hospital the infant was found to have lost 1 lb. 5 oz. in weight, although the mother had been well able to feed the baby herself, the feeds being given for ten minutes three-hourly. The symptoms were of repeated attacks of screaming with both legs drawn up, and these were noticed to occur usually after a feed. There was no history of vomiting, and only three dark-coloured motions had been passed during the first ten days after birth. On the fourth day the infant developed sudden attacks of cyanosis with a rapid and shallow respiration-rate, three having occurred on the day of admission.

On examination the child was very pale and did not cry when disturbed. The temperature (rectal) was 97·6° F., the pulse-rate 128, and the respirations 48. There was a red, patchy mottling on the trunk and legs which faded on pressure. The outline of the chest was normal, but with respiration the right side moved better than the left. Breath sounds were faint all over the chest, and the percussion note was slightly impaired on the left side, front, and back. No adventitious sounds were audible. The apex-beat was in the fourth right interspace, and there were no murmurs. The abdomen was moderately distended, resonant over the line of the descending colon, and dull over the right half. An elongated swelling with firm consistence was palpable in the left iliac fossa, there being no variation in consistence either between or after a feed. Visible peristalsis was absent. Rectal examination produced a small stool with a trace of bright blood and some mucus.

Considerable doubt existed as to the correct diagnosis; intussusception had been suggested before the case was admitted to hospital in view of the above signs, but the

Position of the organs as found at autopsy. (1) Large intestine; (2) ileum; (3) stomach (dilated); (4) and (5) liver; (6) left ventricle.

findings in the chest were considered, possibly, to fit in with congenital atelectasis of the left lung.

The following night at 10 P.M. the baby had an attack of rapid, shallow, diaphragmatic breathing with cyanosis, and the pulse could not be felt. Nasal oxygen was given, and brandy ℥ iv. by mouth. Camphor in ether and olive oil ℥ iv. was given subcutaneously. There was definite improvement following this treatment, and the attack passed off in about 20 minutes. One motion was passed during the day with no blood, but a little mucus, and two feeds had been taken fairly well. A second attack, lasting a quarter of an hour, occurred at 12.30 A.M., and the baby was very collapsed. On the next day he looked a much better colour and the breathing over the right lung was louder than previously. Radiography of the chest showed the heart shadow in a corresponding position on the right side, left lung collapsed, and numerous coils of intestine occupying the left side of the thorax. A third attack, similar to the previous ones, occurred the same evening and the baby died three and a half hours later.

POST-MORTEM FINDINGS

On opening the thorax the whole of the left side of the chest—except the space occupied by the collapsed left lung and for, possibly, a small part of the heart—was found to be filled with coils of intestine. Most of the heart was pushed across into the right side of the chest. There were loose adhesions between the intestinal coils and the back of the sternum and costal cartilages. The right side of the thorax contained a somewhat shrunken lung, most of the heart, and anteriorly some coils of intestine. The left lung was firm, pale, very small, and sank in water. The right was dark purple in colour, rather smaller than the normal, and also sank in water. The right auricle of the heart was dilated. The liver was normal in appearance and position. The spleen was 3½ in. in its longest diameter, and had been pushed down into the left iliac fossa, the lower angle being well below the costal margin. (This was the swelling I had felt at the first examination.)

The stomach was dilated, and the duodenum passed straight upwards, backwards, and to the left to an opening in the diaphragm. All the small and large intestine were in the thorax, except the first 2 in. of duodenum and

the descending colon and rectum. There was an opening in the left side of the diaphragm large enough for the easy passage of a finger. There was no constriction of ingoing or outgoing coils. The aperture was completely surrounded by diaphragm and situated close to the diaphragmatic attachment to the tip of the left twelfth rib.

I should be interested to know whether there are other recorded cases which had lived for nearly three weeks with such an extensive herniation of abdominal contents.

I am indebted to Dr. Norman Hill, senior physician to the Belgrave Children's Hospital, for his kind permission to publish the account of this case.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF OBSTETRICS AND GYNÆCOLOGY

AT a meeting of this section on March 16th, with Prof. W. BLAIR-BELL, the president, in the chair, a discussion was held on the physiology and pathology of

The Pelvic Joints in Relation to Child-bearing

Mr. RALPH BROOKE said that when the higher primates and man adopted the erect posture the mobility of the pelvic joints had to be sacrificed to strength. In birds a similar process went so far that the joint was converted into a synchondrosis; and in human beings, too, especially in males and as middle age approached, there was a tendency for this joint to assume this character. Even in a woman of about 40 the joint proper had gone, and the junction was a mere fibro-cartilaginous one. The changes were probably an adaptation to strain; they started too early to be osteo-arthritic. In the female there might well be a hormonic factor which prevented them from going further than they did. From 21 to 25 years of age a rapid increase in the mobility of the joint was seen in females, strength and solidity being sacrificed to bring it about. From 25 to 50 mobility slowly diminished, but Mr. Brooke had never seen in a woman the bony ankylosis which sometimes developed in old men. In pregnancy the amount of movement was two and a half times the normal for the nulligravida of the same age; and there seemed, indeed, to be a close relationship between the changes in the uterine muscle and in the pelvic joints. After parturition the joints returned slowly to normal. Mr. Brooke suggested that some of the disabilities and derangements common in the pelvic joints after childbirth might be prevented if more attention were given not only to outside games and athletics (during which the weight of the body rested on these joints), but also to exercises in the prone position. Exercises directed to mobilising the sacro-iliac joints had received surprisingly little attention. Much could be done in this way to obviate backache, and girls could be trained to meet the strains of the child-bearing age.

Dr. R. E. ROBERTS (Liverpool) said that the pubic symphysis underwent an increase in width in all women during pregnancy. Radiologically it showed a variety of appearances. Its increase in width was greater in multiparæ than in primigravidæ—2·4 mm., as opposed to 1·6 mm.—and the widening took place quite early in the pregnancy. The change in the sacro-iliac joint was not greater in multiparæ than in primigravidæ. He found that a wide sacro-iliac joint was often associated with hydramnios. In cases of hydrocephalus there was a uniform widening of the whole joint.

Dr. JAMES YOUNG (Edinburgh) said the task of the obstetrician was to discover how far the physiological changes which Mr. Brooke and Dr. Roberts had described were applicable to problems arising in childbirth. Matthews Duncan in 1868 expressed the opinion that during pregnancy the sacro-iliac joint was mobilised in such a way as to permit rotation forward of the innominate bone. He said this occurred during the first stage of labour, and resulted in an increase in the diameter of the pelvic inlet; whereas in the second stage, with the woman on her back and the legs flexed, the innominate bone was rotated in the opposite direction, so increasing the diameter of the outlet. Walcher in 1889 proposed that in order to make use of changes in the pelvic diameters the patient should be placed with her legs hanging down; but Dr. Young exhibited skiagrams by Dr. Duncan White, none of which showed any increase in the antero-posterior diameter of the brim when the patient was in the Walcher position. Canton had found that in 17 per cent. of 500 cases there was definite evidence of movement of the pubes during pregnancy. With the finger in the vagina and causing the patient to transfer her weight from one side to the other he was able to appreciate the movement by the bones of the pubes gliding over one another. It should soon be known exactly how such changes acted in normal labour. The orthopædic backache of pregnancy Dr. Young attributed to an alteration in posture caused by the enlarging womb, with a change in the vertebral curves which resulted in articular strain, muscle spasm, and exhaustion. Usually a simple orthopædic support sufficed, but if the condition was untreated it might lead to permanent disability.

Mr. W. ROWLEY BRISTOW believed that in most cases low backache during pregnancy was due to a lack of tone in the two muscle groups concerned, rather than to direct injury to the joint itself. If it was thought that these patients were suffering from postural defect, the first essential in treatment must be prophylaxis. In antenatal clinics steps could be taken to correct the faulty posture, not only by exercise, but by supplying some form of belt. What should be done if the woman came under observation because of symptoms? If there was free mobility of the spine and it was possible for the masseurs or the gymnasts to put the patient into the correct posture, that was the plan to be adopted, and she should be given a support to take the strain off some of the ligaments. Perhaps the Goldthwait brace was best, put on as low as possible. But if there was no free mobility of the spine, if the patient could not correct the lordosis, if the power of extension at the hip-joint was faulty, if she walked with a rolling gait, then forcible manipulation under anæsthesia was considered as a precursor to physical treatment. That was done only as a means of stretching the structures. The teaching of posture was not a mere matter of massage and exercises, there had to be a well-arranged routine; the patient was taught the correct posture as an exercise until she retained it as a habit. He did not counsel operative treatment unless one was sure of one's ground.

Mr. C. LAMBRINUDI said that lordosis in pregnancy was not assumed with the object of restoring the body balance; the woman would not choose a posture which was one of strain. He believed the general tendency of the pregnant woman was to straighten her back.

Dr. KATHLEEN VAUGHAN said that X ray photographs which she had taken showed that when a woman was in the sitting posture the subpubic angle became much wider, while the symphysis became shorter. Also, the ischial tuberosities separated in the squatting posture. In the East there seemed to be no trouble with delivery until the people became civilised.

Dr. G. W. THEOBALD said there was a great increase in the intra-abdominal pressure when the woman was in the kneeling posture.

Mr. D. W. ROY quoted a case in illustration of his contention that movement at the joints accounted for the satisfactory delivery of many patients whose condition caused anxiety about disproportion.

The PRESIDENT hoped that Mr. Brooke's contribution would be followed up. The way in which the pelvic joints varied with age, and their adaptability to pregnancy and subsequent return to normality, was of great potential significance.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY

AT a meeting of this society held on March 15th at the Jewish Hospital, Stepney Green, under the presidency of Dr. M. D. EDER, a discussion on

Affections of the Gall-bladder

was opened by Dr. C. E. NEWMAN. For an understanding of the symptomatology of gall-bladder disease it was important, he said, to have a knowledge of the anatomy and physiology of the structures in that region. The biliary tract consisted of the bile-ducts, with the gall-bladder as an offshoot from them, a sort of side reservoir. At the lower end of the common bile-duct there was a thickening of the duct wall composed of muscle 1 mm. thick (in man). It was the only muscular part of the main bile-duct system, the remainder being fibro-elastic tubes, the rings containing only vestigial muscle for support. The function of the gall-bladder was to store the bile, and to release it at the proper moment. This storage required that it should be in concentrated form, for the liver secreted more bile than the bladder could hold. The bladder was lined with epithelium thrown into folds so as to offer a greater absorbing surface. The remainder of the tract was lined with mucus-secreting epithelium. Both bile-salts and cholesterol were greatly concentrated in the gall-bladder. In the ampulla of Vater there was an aggregation of muscle-fibre. Only recently had the mechanism of the emptying of the gall-bladder been determined with certainty. When the vagus was mildly stimulated, this caused a contraction of the gall-bladder and peristalsis in the ampulla of Vater, bile being squeezed out in little spurts. If, however, the stimulus applied to the vagus was a powerful one the muscular apparatus went into spasm, and in the ampulla its effect was to dam up the biliary system. These facts had been confirmed by a study of diseases of the gall-bladder which depended on disorders of muscular activity. One effect of the spasm of the ampulla was to cause secondary hypertrophy. Duodenal ulcer produced reflexly pain in the gall-bladder region, this pain radiating through the angle of the scapula, to the accompaniment of nausea, but with little actual vomiting. The appetite was defective, and often the patient lost weight. Other manifestations were spasm of the pylorus and of the colon, and the occurrence of lienteric diarrhœa. One of the important effects was to cause heart irregularity, in the form of extrasystoles and sinus arrhythmia. Spastic distension of the gall-bladder could be partly diagnosed by means of cholecystography. The abnormal gall-bladder condition following functional over-action had led often to cholecystitis being diagnosed, and to many fruitless operations, as removal of the gall-bladder failed to cure the symptoms. It was often stated that cholecystitis was not accompanied by any rise of temperature; but complete apyrexia was, he thought, very rare. The pain due to an inflamed gall-bladder was felt particularly over the region itself. The duodenal tube was much misused for diagnosis; the tube was passed, and the laboratory asked to test the contents for pus and bacteria, when really the condition was an affection of the gall-bladder wall. Pus in the bile was not an invariable accompaniment of cholecystitis. More important than looking for pus and bacteria was a test for cholesterol crystals. The normal gall-bladder absorbed some cholesterol and some bile-salts, forming together a water-soluble compound. In the gall-bladder which had been inflamed the absorption process was altered, for it let through the bile-salts and left the cholesterol behind. That was the meaning of the cholesterol crystals so often found in the bile in cases of cholecystitis. These crystals were not dissolved by the duodenal contents; their presence did not necessarily imply gall-stones.

Response to treatment had a bearing on diagnosis. One should as a rule, of course, diagnose the disease and then treat it, but much was to be gained in diagnosis by watching the effect of temporary treatment. If on an alkaline diet the symptoms were alleviated, it was very probable that the condition was duodenal ulcer. The diagnosis of chronic cholecystitis from functional disease of the gall-bladder or other diseases was a difficult problem. Acute cholecystitis could cause colicky pain, like true gall-stone colic; pain in that region did not prove that the patient had gall-stones. Gall-stone investigation had been hampered in England for 60 years because any solid lump in the gall-bladder was called a gall-stone. Germans and Americans had classified them. The ordinary faceted stone with fine radiating crystals was always due to cholecystitis; that had been proved from morphological, biochemical, and histological sides. The pigmented calcium stone, the tiny black hard stone, was certainly not an inflammatory product; it was of metabolic origin. It was found in acholuric jaundice. The pure cholesterol stone was never multiple. The barrel stone, which completely filled the gall-bladder, was certainly of infective origin, and resulted from cholecystitis.

Should gall-stones be left in situ? Or should they be removed? The answer largely depended on what the stones were doing. It had been maintained that gall-stones produced (1) prodromal symptoms due to their presence, (2) gall-stone colic. The first of these statements he denied; it was the cholecystitis which produced the symptoms. Once a gall-bladder had been infected and sufficiently inflamed to produce

gall-stones, it would never return to normal; therefore he favoured surgical removal of gall-stones, with the proviso that a large stone could be left alone, while a small one should be removed as it had a tendency to wander and cause mischief. In the vast majority of cases suffering from gall-stones he would have gall-bladder and stones removed together.

Mr. G. GORDON-TAYLOR said that the surgical treatment of diseases of the gall-bladder had not appreciably advanced in the last ten years. Operation for so-called acute cholecystitis was never so urgent as was that for acute appendicitis. In many cases the inflammatory symptoms would settle down and the disease could be eradicated later. But even in acute cholecystitis there were cases which demanded urgent surgery; indeed he was brought up by Sir John Bland-Sutton to regard all cases of acute cholecystitis as demanding imperative surgery. The mortality of cholecystectomy for acute cholecystitis was not more than 2 or at most 3 per cent., but the operation for the acute condition was more difficult than when it was done under quiet conditions. One of his own cases died of pulmonary embolus on the 21st day after operation. In the other the abdomen contained a large quantity of blood-stained fluid, and in the gall-bladder after removal *B. welchii* was found. Large doses of the appropriate serum were given but the patient died. In some quarters it was still held that cholecystectomy should not be done for acute cholecystitis, that the first procedure should be drainage, and that the gall-bladder should be removed at a later date. It was, however, hard for the patient to have to look forward to a second operation.

Chronic cholecystitis could be divided into chronic calculus, cholecystitis, and stoneless cases. For the former, if uncomplicated, the right treatment was cholecystectomy, the operative mortality being under 1 per cent. Where there was associated cholangitis with jaundice due to obstruction of the common duct, the decision was not so easy. In the stoneless chronic condition he only operated after serious consideration. The patient's own feelings, and his capacity for work or otherwise, had much to say in the decision. Pulmonary embolism and thrombosis did occur, no matter with what care operations were done. Another class of case was that in which chronic cholecystitis had been associated with reflex conditions. These patients might have nausea or vomiting; some cases closely simulated carcinoma of the stomach. One such patient he thought had carcinoma, but only a chronically inflamed gall-bladder was removed, and the symptoms cleared up. That was ten years ago. There was a third class of case in which surgery might be indicated—namely, where there was an associated syndrome of chronic appendicitis, chronic cholecystitis, and possibly severe pyelitis. In some of these the pyelitis was the most urgent symptom, and removal of the gall-bladder had a good effect on it. In a fourth class of case the gall-bladder might be responsible for generalised toxæmic phenomena. Prof. D. P. D. Wilkie had reported cure of arthritis by removal of the gall-bladder; similarly some cases of myocarditis had been relieved.

The surgery of pure gall-bladder disease had reached a high state of perfection. Mortality from the operation was very low, and it gave every prospect of cure. Sometimes a complication caused anxiety. He had seen acute dilatation of the stomach afterwards. None of the complications, however, had been severe enough to be fatal. Before operating on a gall-bladder, particularly one which did not harbour a stone, it was necessary to make sure that the gall-bladder was the cause of the symptoms. Many years ago a woman was sent up from the country with a diagnosis of carcinoma of the splenic flexure with threatened intestinal obstruction. A consulting physician confirmed that view. The surgeon thought there was gall-bladder disease and he removed the gall-bladder which contained a large stone. But all the measures to get the bowels to act failed, and five days after the operation she sustained a perforation with peritonitis. She had carcinoma of the splenic flexure.

Dr. G. E. VILVANDRÉ showed a number of slides. The diagnosis of gall-bladder disease depended, he said, first on a careful clinical history—but there might be little history, the patient complaining only of vague dyspeptic symptoms. Most cases were recognised on a methodical examination. A fair percentage of gall-stones were revealed by radiography, and when a definite view of a gall-stone was obtained the diagnosis was beyond dispute. But stones were not always visible, and appearances might not be typical. The dye test was then of value, but with reservations. Before using the test the gut should be cleared out if possible, though not on the day before giving the dye. He usually examined 12 hours after swallowing the dye. Of the intravenous method he had no experience; a few fatalities were said to have followed its use. Rarely the gall-bladder might be double or a bifid fundus might be present. The fundus of the normal gall-bladder projected about an inch beyond the margin of the liver, lying on its under surface in a groove external to the quadrate lobe. A mesentery might be present, especially in ptosis, and if this was long enough to permit of torsion the circulation was obstructed and gangrene might follow. In this rare condition stones might also be present. He had seen a gall-bladder well below the crest of the ilium; the radiologist must therefore seek the gall-bladder over a wide area. Stones might be found in the common bile-duct, when a barium meal was useful to investigate the relationship of duodenum and gall-bladder. If a gall-bladder was visible without any dye it was probably pathological; the normal bladder when filled with dye appeared homogeneous. Contrasting shadows might be due to gall-stones, or a polyp might displace the dye. In a clinically inflamed and fibrous gall-bladder calcareous changes might occur; the whole thickness of its wall might be laminated. Sometimes stereoscopic radiography was an aid to diagnosis. A diseased gall-bladder might hold one or more pints of fluid. The more closely a gall-bladder was packed with stones, the less easily would the dye find its way in; moreover, the density of the stones might be so slight that the rays did not reveal them. Calculi in the head of the pancreas might be mistaken for gall-stones, especially if in the duct of Wirsung. These stones were made of calcium carbonate, phosphate, or oxalate.

He had often been asked to investigate the possibility of an abnormal gall-bladder, where symptoms suggested duodenal ulcer, chronic pancreatitis, or cholecystitis. When the result of a barium meal was negative it did not follow that the patient was not suffering from organic trouble. In some cases a stone might be in the cystic duct, in others it might be in the gall-bladder. Much had been said on the differential diagnosis of gall-stones and renal stones, but a careful investigation of the kidney area and the gall-bladder region would settle the problem. In his view, gall-stones, when diagnosed on the film by the radiologist, should be equally visible to the surgeon; indefinite shadows should not be accepted by the surgeon as evidence.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

THIS society met at Sheffield on Feb. 23rd under the presidency of Prof. DANIEL DOUGAL (Manchester). A paper on

Hysterectomy

was read by Mr. PETER MCEWAN (Bradford) who based it on the after-histories of 112 women (out of 196 who had the operation done in hospital during a period of eight years) who attended hospital last spring and responded to a questionnaire. In about a third of the cases (37) the hysterectomy was performed for fibroids; all the rest, except 8, came under a miscellaneous heading of "endometritis, salpingo-oöphoritis, and endometriosis." Of the 112 all but 3 were restored to health after the operation.

In commenting on the large size of his miscellaneous group Mr. McEwan said it was drawn from a class of women who presented themselves in fair numbers at the out-patient department. Their health was being undermined by pelvic pain, dysmenorrhœa, and menorrhagia: to these symptoms were often added backache, leucorrhœa, frequency of micturition, and dyspareunia. The menstrual period had become a burden, and they did not recover completely from one before the next arrived. They gradually became debilitated, unhappy, and neurotic. To these women, in selected cases, hysterectomy was a tremendous boon, restoring them to comfort and fairly sound health. Care must be taken to exclude the neurotic woman who had centred her neurosis on her pelvic organs, and cases in which less drastic treatment may be effective; and hysterectomy must not be done without the intelligent consent of the patient and (if married) her husband, and the coöperation of her doctor. The fact that these cases were far commoner in hospital than in private work showed how greatly the conditions of life reacted upon pelvic symptoms, and no doubt a sea voyage and an easy healthy life would relieve many. Hysterectomy was regrettable, but the verdict of almost every woman in this group of 67 cases was unhesitatingly, often enthusiastically, in praise of the operation. It might be argued that where the uterus was not greatly enlarged an artificial menopause induced by X rays or radium would suffice, but as Green-Armytage pointed out, the difficulty of exact diagnosis between endometrioma, malignant disease, inflammatory conditions, and fibroids was an argument of weight in favour of operative treatment. When the uterus had fulfilled its essential function of childbearing or ceased to be capable of it, and the pelvic organs had become a tax on physical and mental well-being, hysterectomy was an invaluable method of restoring health, and should not be delayed until prolonged pelvic trouble had inflicted serious permanent damage on the nervous system.

In this series, Mr. McEwan reported, the conservation of ovaries did not seem to mitigate the severity of the menopause; it did not prevent the occurrence of obesity or the loss of sexual feeling. Menopausal symptoms were negligible in 27 per cent., slight in 16 per cent., moderate in 25 per cent., and severe in 32 per cent. In the severe cases a constant feature was a history of repeated trauma to the nervous system, either from dysmenorrhœa, a hard life, or other cause (sometimes marital) of chronic nervous exhaustion. A considerable increase in weight followed the operation in only 25 per cent. of cases; patients under 40 were more than twice as liable to obesity as those over that age. Sex feelings, in cases where it was possible to inquire about them, remained unchanged in 53 per cent., were increased in 5 per cent., diminished in 17 per cent., and disappeared in 25 per cent. Mr. McEwan doubted whether figures for the normal menopause would be better than these. There were four cases of mental upset. In conclusion, Mr. McEwan said that such common symptoms as frequency of micturition, backache, and leucorrhœa were cured in 90 per cent. or more of cases. He quoted James Young as having found repair of the torn cervix very effective in the treatment of gynæcological backache, and pointed out that in nearly all the present cases the cervix was conserved.

Gynæcological and Obstetrical Abnormalities

MALIGNANT TERATOMA OF THE TESTIS IN A "GIRL"

Mr. CARLTON OLDFIELD (Leeds) reported the case of a patient admitted to Dewsbury Infirmary complaining of pain in the right side of the abdomen for three weeks, with recent vomiting. On examination the appearance was that of a normal girl of 14. There was an ill-defined mass in the lower abdomen, and on rectal examination a fixed tumour was found in the pelvis. Laparotomy was done; the tumour, attached by a broad base to the top of the left broad ligament, was found to be adherent to small intestine and omentum. The uterus and right tube were small, the right ovary absent. At the usual site of attachment of the right ovary was a porcelain-white structure, flush with the posterior layer of the broad ligament, as big as the impression of a little finger; tiny cysts projected from it. In the position of the ovarian fimbria was another structure, the size of a coffee bean and egg-shaped; it was whitish and solid. The tumour and the left tube were removed, the uterus and other structures being left. When a pathological report had been received from Dr. R. Carmichael stating the tumour was a teratoma with epithelial malignancy, the abdomen was reopened and the uterus removed with most of the right broad ligament. Recovery was normal. Subsequently a course of deep X ray treatment was given. When the child was seen on Feb. 7th, 1934, she had returned to school. There was no sign of recurrence. The breasts were flat; the Aschheim-Zondek test was negative.

Histologically Dr. Carmichael found the structure in the position of the right ovary to be an atrophic testis. The coffee-bean structure was a typical epididymis. The tumour itself was a typical tridermal teratoma of small cystic type; most of the tissue was fairly differentiated, but much was still embryonic, and large portions of a solid area were carcinomatous. It was assumed to be of testicular origin partly because teratomata of this type are fairly common in the testis and very rare in the ovary, and partly because the patient is more likely to be a pseudo-hermaphrodite than one of the much rarer true hermaphrodites. The patient's feminine habitus does not affect this view, because in cases of pseudo-hermaphroditism with bilateral testes the secondary sexual characters virtually always conform to the external sexual organs rather than to the sexual glands.

CONTRACTION RING IN THE FIRST STAGE OF LABOUR

Prof. MILES PHILLIPS showed a post-mortem specimen of a uterus containing a fœtus at term, showing an internal stricture. It had been obtained from a primigravida of 29, who died unexpectedly whilst recovering from examination under an anæsthetic during a labour which had lasted more than three days. Chloral hydrate, morphia, and scopolamine had been given during the first two days, and nembutal (grs. 6 in all) and chloral hydrate during the last ten hours. Œdema of the glottis and slight chronic renal sclerosis were the only lesions found. There was no obstetrical injury. The fœtus, of 8 lb. weight, lay as a R.O.T. with the head in the upper pelvic cavity. The ring persisted after death as a horizontal sharp-edged crescentic ridge, visible on the inner surface only, exactly opposite the neck of the fœtus. It extended round a third only of the circumference of the uterus at this level

and was 17·5 mm. thick at its base with a flat upper and concave lower surface. The uterine wall above and below was only 4 mm. thick (3 mm. at the cornua) except for a small localised thickening (9 mm.) opposite a depression below the knees of the fœtus. The cervix was thinned to 2 mm. and was not quite half dilated. The membranes had been punctured on account of hydramnios when the cervix admitted two fingers. Prof. Phillips considered that the contraction ring afforded an explanation of the repeated attacks of colicky pain which had distressed the patient during the last 36 hours; they would have been better treated by repeated doses of morphia, with atropine in the interests of the fœtus.

MENORRHAGIA CURED BY SPLENECTOMY

Mr. OLDFIELD described the case of a woman of 25 who had suffered from menorrhagia for three years and resultant relapsing anæmia. Her menstrual periods usually lasted three weeks. There was no pelvic cause for the bleeding. Dr. S. J. Hartfall found in the blood a deficiency in platelets with prolonged bleeding time; there was bruising on percussion over bony points, and a purpuric eruption could be produced by venous congestion, though there had never been a purpuric rash or bleeding from other mucous membranes. The spleen was not palpable, and there was no relevant family history. Splenectomy was advised and was done by Lord Moynihan after two blood transfusions. The bleeding time became normal immediately after operation. Within six days the platelet count had risen from under 20,000 to 1,000,000 per c.mm. They then fell to 500,000 and had remained about 400,000 since. A menstrual period of normal amount lasting four days occurred in the second week of convalescence. The general condition of the blood improved quickly, and at the present time, nine months after operation, the blood was normal and the patient in perfect health. Since operation she had had short regular periods and no excessive loss. This case emphasised the necessity for a full blood examination in all cases of menorrhagia of obscure ætiology.

Mr. OLDFIELD also gave an account of a case in which Wertheim's operation for cancer of the cervix was performed during labour, in a 5-para, aged 31.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY

Mr. ALEX. MITCHELL, the president, took the chair at a meeting of this society on March 1st when a paper on

Bronchoscopy and Œsophagoscopy

was read by Dr. H. ROSS SOUPER. The value of bronchoscopy in diagnosis and treatment had not, he said, been sufficiently recognised. He had found it very useful in a small series of 22 cases in which foreign bodies and lung abscess were the two commonest conditions. In 2 out of 4 cases of tumour it confirmed a diagnosis which was only suspected on clinical grounds. Likewise, in the investigation of œsophageal symptoms, œsophagoscopy was an essential method of examination, especially as radiography of the barium-filled œsophagus sometimes gave misleading results. His 166 cases in which œsophagoscopy was done included examples of foreign body, cardiospasm, cricopharyngeal spasm, dysphagia and anæmia, simple stricture, peptic ulceration, œsophagitis, diverticula, abscess, functional dysphagia, and malignant disease. In two of those with foreign bodies an examination had been made by bougie or other instrument before the patient was admitted to hospital, and both these patients eventually died—one of them with perforation of the œsophageal wall and ulceration into the left subclavian artery. In the cardiospasm group there were 12 females and 7 males, the youngest being 17 and the oldest 65. All had been submitted to œsophagoscopy with a view to confirming the diagnosis and nearly all had been treated with success by the use of the mercury bougie. Three patients in whom the œsophagus was so dilated that the bougie could not hit off the cardiac opening had been submitted to Walton's operation, one of whom had died of streptococcal gastritis. Dr. Souper here delivered a warning against the too ready acceptance of a radiographic diagnosis of cardiospasm in an elderly patient, since the symptom might mask those of malignant disease of the cardiac end of the stomach. Seventeen cases, all in females, of dysphagia and anæmia (the Plummer-Vinson syndrome) had been investigated, and in 7 cricopharyngeal spasm and in 6 a cricopharyngeal web had been found. These cases also improved with passage of the mercury bougie and administration of iron in suitably large doses.

Finally, in considering the 50 cases of malignant disease, Dr. Souper urged that practitioners finding patients of cancer age suffering from dysphagia, however slight, should send them for early complete examination, since the only hope of satisfactory treatment was afforded by early diagnosis. He also repeated his warning against the indiscriminate use of bougies in patients presenting symptoms of œsophageal obstruction. The ages of his 50 patients ranged from 28 to 77. In treatment he believed the most hopeful results had been obtained by the direct implantation of radon seeds into the tumour area of the œsophagus. Intubation by a radium-bearing tube had on the whole been disappointing, and Souttar's method of intubation had been used in two cases without benefit. The patients in whom radium and/or radon had been used numbered 13, and all of them had since died, but as every other patient with proved malignant disease of the œsophagus was also dead, the radium was not to be blamed for this result. In one case radon seeds had caused the complete disappearance of the tumour for eight months, when recurrence took place. Early gastrostomy was, he thought, of the utmost help, since it maintained the patient's general condition, rested the œsophagus, and prevented irritation of the tumour.

ROYAL ACADEMY OF MEDICINE IN IRELAND

AT a meeting of the section of obstetrics on Jan. 26th, with Dr. T. M. HEALY, the president, in the chair, a discussion arose on

Rupture of the Uterus

Dr. A. H. DAVIDSON gave an account of two cases.

The first patient had a routine classical Cæsarean section at the Rotunda Hospital in July, 1926. The baby weighed 6 lb. 14 oz. In November, 1928, she was given a trial of labour, but after 8½ hours a lower segment section was done, and a child of 6 lb. 13 oz. delivered. On her return in October, 1930, the membranes ruptured and a dead fœtus weighing 5 lb. was extracted. In March, 1932, she came in again, and after 3½ hours' labour a child was spontaneously born weighing 5 lb. 4 oz. Her last readmission was on Jan. 18th of this year. Dr. Davidson examined her under an anæsthetic, but did not put his fingers into the uterus to feel what the scar was like. At 6 A.M. labour commenced, but by 6.45 the pains had stopped and the pulse-rate was 100. The patient said she felt quite well. On abdominal examination a rent was found in the uterus, and at operation there was much free blood in the abdomen and the child was among the intestines. Total hysterectomy was done and the patient made good progress.

The second patient had a lower segment Cæsarean section in 1925, done chiefly because of disproportion. The child weighed only 4 lb. 9 oz., but had a hydrocephalic head. The patient was morbid on the fourth, fifth, and

sixth days. In December last she was admitted almost at term. In the first stage of labour the uterus was very tender, but the fœtal heart-rate was normal. She was examined under an anæsthetic and there was some overlapping in the transverse diameter. It was decided to give her a trial of labour. The next day the abdomen was more tender, and it was doubtful if the fœtal heart could be heard. For three days she remained in much the same condition, and then she was examined per vaginam again. There was some bleeding, and something resembling a placenta could be felt. The patient had ruptured her uterus through the lower segment scar, and the baby and the placenta were in the abdomen. The abdomen was opened and hysterectomy was performed.

The PRESIDENT pointed out that a factor common to both cases was the comparative absence of symptoms. Text-books led one to suppose that rupture of the uterus was sudden and dramatic, but in his opinion this was not so. In the Coombe Hospital each year there were usually three or four cases of vaginal delivery after previous Cæsarean section, but he did not allow labour to begin unless he was absolutely confident that the patient could have her baby through the pelvis without undue difficulty. The second case suggested that the uterus had ruptured for a considerable time before the operation was performed, and this bore out his contention that it was very difficult to recognise the rupture at the outset.

Dr. J. F. CUNNINGHAM said that where there was any serious doubt whether the head would get through or not Cæsarean section should be done—even if it had been done before. The question of union of the uterine muscles after Cæsarean section was an interesting one. Sometimes it was impossible to have any muscular union at all; there was only scar tissue, and he thought that this was where the separation occurred when the patient was in labour for some time. He did not think it made any difference what kind of suture material was used, although he personally preferred catgut to silk. Catgut was absorbed, whereas silk remained as a foreign body.

Dr. R. M. CORBET said he had done a classical Cæsarean section in the first case described. He was astonished to hear that a scar so thin as the one seen in the specimen had gone through two vaginal deliveries without rupture. There was no evidence, he thought, that the second patient was ever in labour. In cases where there was any suspicion of the uterus rupturing, no vaginal manœuvres at all should be undertaken.

Mr. E. A. KEELAN spoke of the necessity of making certain that the operation scar struck the middle line of the uterus. It was extremely difficult to obtain a good scar, because abdominal distension always developed after Cæsarean section. Sometimes it was necessary to give pituitrin to combat this.

Dr. BETHEL SOLOMONS hoped that Dr. Davidson, in spite of the disasters reported, would continue to give a trial of labour to patients who had had a previous Cæsarean section. These cases must be carefully chosen, and during a trial the patient must be nursed with great care. Signs of threatening rupture were tumultuous movements on the part of the fœtus, restlessness on the part of the woman, and a hæmorrhagic discharge. As regards sutures he thought that Holland's figures showed that non-absorbable material gave better results than catgut. The fact that the first patient's last child weighed 1 lb. 3 oz. more than any previous one was the determining factor in the rupture. Statistics showed that the weight increased with multiparity. Morbidity after Cæsarean section operations might be due to post-operative trauma, infection of the scar, intra-uterine infection, or extra-pelvic conditions. Unless it was due to scar infection, trial of labour subsequently was not contra-indicated.

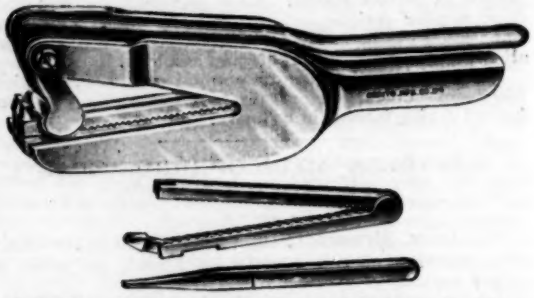
Dr. DAVIDSON, in reply, said that in the second case the uterus had apparently ruptured during the days when the patient was being watched, although her chart showed little sign of any change until the time when the rupture was discovered. The child was alive after the rupture. He personally found it very difficult to put silkworm-gut into a Cæsarean scar, and in classical scars he always used silk. He agreed with Mr. Keelan that the scar should be as nearly as possible in the middle of the uterus.

Dr. D. J. CANNON read a paper on some cases of obstetrical and gynæcological interest.

NEW INVENTIONS

A CRUSHING CLAMP FOR LARGE INTESTINE

IN the operation of abdomino-perineal resection of the rectum for carcinoma the sigmoid colon has to be divided. The division of the bowel is usually made through a part which has been crushed so that little but peritoneum remains. When the bowel is hypertrophied or œdematous it may be difficult to crush the gut satisfactorily. With clamps of the usual scissor-type the distal part does not get so completely crushed as the part near the hinge and the division is not made so cleanly. Moreover the wrapping of the cut ends may work off and soiling take place. With a view to the more easy division



of the bowel and manipulation of the cut ends, I have devised a clamp made something on the pattern of Martel's and consisting of three narrow-hinged segments which fit closely into a powerful crushing lever. The crushing force being applied at the distal end of the hinged segments an equable effect on the whole circumference of the bowel is assured. Crushing continues till each segment is locked by a special catch. After removal of the crusher the middle segment of the clamp is unlocked and removed and the exposed thin lamella of crushed bowel divided by the cautery. The lateral segments of the clamp remain one on the proximal and the other on the distal ends of the severed bowel. They do not slip off, for they are ridged longitudinally and grip the bowel tissue firmly. They can be covered with gauze enabling manipulation of the bowel ends to be carried out with greater ease. The proximal clamp is easily pushed lengthwise through a small stab-wound in the left iliac region, whilst the distal clamp is pushed down below the pelvic peritoneum and can readily be felt and seized during the perineal stage of the operation. Two lengths of clamp are made: one for the large and one a perfect crusher for the small gut.

The Genito-Urinary Manufacturing Company, Devonshire-street, London, W., are the makers.

ZACHARY COPE, M.S. Lond.

REVIEWS AND NOTICES OF BOOKS

Recent Advances in Vaccine and Serum Therapy

By A. FLEMING, F.R.C.S., and G. F. PETRIE, M.D. London: J. and A. Churchill. 1934. Pp. 463. 15s.

THIS latest addition to the excellent "Recent Advances" series is of joint authorship, Prof. A. Fleming writing on vaccines, and Dr. G. F. Petrie on sera. The result is an authoritative and readable book which compares favourably with the best of the volumes previously issued in the series. Though primarily concerned with recent advances it provides a comprehensive practical account of serum and vaccine therapy, including non-specific protein therapy. In certain places corollaries are accepted, while the fundamental proposition on which they are based is still unproved, but this is a liberty for which writers on therapeutics can hardly be blamed in the present state of our knowledge. Prof. Fleming is on the whole a lenient critic of vaccine therapy, and not every reader will be disposed to accept all his views on the efficacy of vaccines. However, he rarely fails to make it clear when he is recording experimental evidence and when he is expressing a clinical opinion.

Many medical men have felt the need of a reasoned "pharmacopœia" of modern serological remedies; this book meets this need, since nearly every modern use of serum and vaccine therapy has been given adequate discussion.

Manuel de radiodiagnostic clinique

By R. LEDOUX-LEBARD, Chargé de Cours de Radiologie Clinique à la Faculté de Médecine de Paris, Radiologiste des Hôpitaux. Paris: Masson et Cie. 1933. In two vols. Pp. 1076. Fr.260.

IT is inevitable that X ray diagnosis should through the very rapidity of its growth have become liable to misuse both by clinicians and radiologists. Some fail to keep abreast with its development and do not realise its full possibilities. Others come to rely upon it to the exclusion of other methods of examination. Others again expect from it more information than it can possibly give. Dr. Ledoux-Lebard supplies a salutary corrective to these mistaken attitudes, for not only does he cover the whole field of X ray diagnosis, but he also correlates the X ray with the clinical and pathological findings, thus emphasising some of the fallacies and limitations. His work consists of two volumes. The first after an introductory chapter on the nature of X rays and their use in diagnostic radiology covers the examination of the bones and joints, the sinuses, the circulatory and respiratory systems. The second volume covers the digestive and urinary tracts and gynæcological conditions.

In the opening chapters the author gives much very sensible advice on the attitude of the radiologist towards his work, quoting the pregnant words of Béclère, doyen of French radiologists, "Les rayons de Roentgen ne trompent jamais; c'est nous qui nous trompons en leur demandant plus qu'ils ne peuvent nous donner ou en interprétant mal leur langage." We note in particular the advice to the young radiologist not to rely solely upon atlases, but to build up an X ray library (radiothèque) of his own. The most valuable section in our view is that which deals with duodenal and jejunal ulcer, the search for which constitutes the most difficult task which the radiologist has to face. It is disappointing, however, to find that duodenal ileus receives scant mention. In discussing the large intestine it is made clear that conclusions can only be drawn with great reserve from the appearance of the mucosa. The account of the renal system is particularly good, more especially with regard to the bladder and male urethra. There is also an excellent chapter on the use of lipiodol in displacements and affections of the uterus and tubes, a method which deserves more attention in this country than it has hitherto received. The technique of ventriculography and myelography is described in full detail, while the recent work of Moniz and his compatriots on arteriography [1] receives adequate illustration. The radiograms are well reproduced and the explanatory diagrams simple and clear. In the section on the skull, however, more diagrams to show the position of the head might have been introduced to supplement the verbal description.

Dr. Ledoux-Lebard has drawn freely and with advantage from the experience of his colleagues. The result is an admirable presentation of modern X ray diagnosis which is at once comprehensive, well-balanced, and readable. We congratulate him on a great achievement and warmly commend his work to English radiologists.

The Life of Sir Robert Jones

By FREDERICK WATSON. London: Hodder and Stoughton, Ltd. 1934. Pp. 327. 12s. 6d.

THIS is a sympathetic account of a great career written with enthusiasm for its subject by a near relation—for Frederick Watson is the son-in-law of the late Sir Robert Jones—but with no exaggeration, facts and documentary evidence being behind the statements made. Robert Jones's heredity and bringing-up were such as to prepare him intellectually and morally for his future success. As a lad he came under the powerful influence of Hugh Owen Thomas, his uncle by marriage, who was at the time conducting in Liverpool a large orthopædic clinic on lines then held by some to be unorthodox. In his student days Jones had little contact with learning or scholarship, but he was in an environment where to secure a practical knowledge of surgery was inevitable, while he was in close association with a vigorous and liberal thinker. He learned early to look beyond the surgical injury to the patient's social circumstances and mental make-up, and beyond the individual case to such larger issues as the prevalence and preventability of similar disasters; thus from the beginning of his professional life he became imbued with the broad humanity which was later to signalise his work. He has himself described a normal day in the establishment in Nelson-street, Liverpool, where he assisted Owen Thomas, and has shown how a flow of patients from morning to night provided material for the formation of principles of treatment, for the carrying out of the principles in every detail on the premises, for prognosis, and for the observation of results. It was a great training.

At the age of 30 Robert Jones had established himself firmly if modestly as a surgeon with a special orthopædic equipment; he obtained a good hospital appointment and improved his position by marriage. And one year later, that is in 1888, came his great opportunity with the building of the Manchester Ship Canal. This huge enterprise entailed the

[1] See THE LANCET, 1933, ii., 1144.

employment in the neighbourhood of Liverpool of 20,000 workmen, carrying on their labours in conditions where the incidence of casualties would necessarily be high. This was realised by those in charge of the construction, and Jones was appointed surgeon-in-chief to the Manchester Ship Canal, with the responsibility of supervising the work done by many colleagues. He designed and supervised hospitals or casualty stations along the 35 miles occupied by the works. The hospitals were placed close to the canal as it was formed, and Jones did the major operations with astonishingly good results. He brought to bear on all sorts of injuries the lessons learned in Nelson-street, and although Thomas died in 1891 the work in Nelson-street went steadily on during the building and after the completion of the canal. And always Jones was learning and trying to learn, and it is significant that he set up one of the earliest X ray plants in the country, and was in this sense a pioneer in radiology. He obtained the necessary apparatus the moment Rontgen's discovery was announced, put it in the hands of Prof. Thurstan Holland, and in February, 1896, he and Sir Oliver Lodge wrote jointly in THE LANCET the earliest recorded example of the use of X rays. But the author points out that although Jones became an expert in the use of X rays for the diagnosis of bone conditions he gave (this also in our columns) a significant hint as to the limitations of radiology. "It is a valuable adjunct," he said, "to our clinical armamentarium, but it should never be allowed to usurp our other diagnostic faculties. It is deplorable to think of the education of the student of to-day who rarely troubles to make himself ordinarily efficient in the diagnosis of a fracture, but meekly awaits the revelation of an often misleading X ray photograph." It was in just such pronouncements, never made without justification, that Jones showed his wisdom.

Throughout the 'nineties his fame as an orthopædist grew, more rapidly at first in America than at home; orthopædic surgeons were then more advanced in the United States than in England, and all the American specialists who arrived in Liverpool saw Jones at work. Recognition in his own country, however, soon followed, and when in 1914 the war broke out universities and colleges had already united in their appreciation of his work, learned societies had made him an honorary member of their bodies, and in 1913 he presided over the orthopædic section of the International Congress of Medicine in London.

The war found him 57 years of age. He joined at once, and in the normal course of duty made an inspection tour of various hospitals in the Western command. What he saw shocked him from the orthopædist's point of view. A damaging report was sent to the War Office, and Sir Alfred Keogh invited Major Robert Jones to organise a special hospital of 250 beds in Liverpool. Hence Alder Hey and from the experiences there arose the whole scheme for the orthopædic treatment of 30,000 wounded. Within 18 months of the outbreak of war Jones's influence was permeating military surgery by deed and word both on the front line and in the hospitals at home and abroad. He now represented to Sir Alfred Keogh the need for "one large orthopædic hospital . . . staffed by expert men under a director who should be the final arbiter as to the conduct of treatment. This hospital should contain at least 800 beds and should be a military hospital." The Shepherd's Bush Military Orthopædic Hospital resulted, proved a demonstration of the methods of orthopædic surgery, and became the starting point of organised attempts to secure physical and psychological restoration to the crippled soldiers. Jones toured the country visiting the cases in general and military hospitals; he developed orthopædic centres, set on foot the scheme of coöperative workshops, and between 1916 and 1918, until the burden was shouldered by military pensions, he struggled to preserve the disabled discharged soldier from disaster. The rest is so well known as to need no recall here; for the general public the record is set out eloquently as well as accurately in this book and explains why Jones obtained both within and without his profession such solid admiration. "Surgical genius, humanitarian, gifted with prodigious personal vigour and enthusiasm—such virtues have fallen together to the lot of few men" writes the author; the words will receive general endorsement; they justify the production in appropriate form of a biography which proves their truth.

Oral Surgery

By STERLING V. MEAD, D.D.S., M.S., M.B., Professor of Dental Surgery, Georgetown University. London: Henry Kimpton. 1933. Pp. 1087. 63s.

THIS book lacks balance. Carcinoma of the tongue, its diagnosis and treatment is dismissed in 13 lines. Syphilis and tuberculosis of the same organ received just over a page in a book devoted to oral surgery and containing well over 1000 pages of printed matter. Much space is devoted to such subjects as case-taking and pre-operative preparation. Resuscitation of the apparently dead and hospitalisation each have a chapter of their own. The author's conception of some fundamental physiological facts is as odd as is his method of their presentation—i.e., "The important fact to bear in mind is that just as the amount of blood in an organism is reduced, so the coagulability of the remaining liquid is lessened." A carbuncle is defined as being "an agglomeration of boils in immediate proximity." The chapter devoted to the surgery of cleft palate contains a full description of Roux's and Warren's original operations in 1819–20. It is hardly necessary to state that these have long ceased to have anything but historic interest.

Davies-Colley's operation (1894) as modified by Logan is advocated and the author states that "this technique may be used on infants with remarkable success in obtaining a complete closure of all except the soft palate." Most British surgeons have long discarded this operation because (1) the flaps nearly always slough, and (2) the object of operative attack in a cleft palate is the soft palate, and the objective is the attainment of as long and as mobile a soft palate as is possible. A small hole in the hard palate is of no significance, and can be closed by an obturator.

Prof. Mead also advocates a modified Langenbeck operation. In the diagram illustrating his technique no lateral incisions are made in the mucoperiosteum of the hard palate, and tension sutures passed through metal plates are advocated as being the means of relieving the pull on the suture line.

These major criticisms make it hardly necessary to warn the British reader that he may find its American style somewhat disturbing. If he is irritated by the statement that hæmorrhage from a bleeding tooth "may be controlled by putting a suture with a slight bit of tension," he will be charmed by the meiosis of another—in the same chapter—that "the permanent ligation of the common carotid artery is an operation that should never be done without necessity, as it is not free from danger."

THE LANCET

LONDON: SATURDAY, MARCH 24, 1934

PUBLIC AND PRIVATE PRACTICE

IN a letter published last week a correspondent drew attention to a conflict of opinion between a medical officer of health and the practitioners of the area he serves about the best way in which assistance may be given in the work of a health department. Apparently it has been found that the demands upon the time of the medical officer are beyond his single-handed capacity, and his council has decided to appoint a whole-time assistant medical officer. The view of the local practitioners is not that assistance is unnecessary, but that it should be given by practitioners acting in a part-time capacity. The writer of the letter apparently inclines to the view that the arguments against are stronger than those in favour of such a policy, although he agrees that it may be in the general interest of the profession that practitioners should be engaged in this work. The question is an important one. The town concerned in this controversy is not the only place where the issue is arising, and it is desirable for the medical profession as a whole to face it.

When the first medical officers of health were appointed nearly ninety years ago, it was the rule for posts to be held by men engaged for the major part of their time in some other branch of medicine. Some of the holders of these appointments, like their forerunners who without official status were crusaders in preventive medicine, devoted an amount of time and energy to the furtherance of the public health which brought credit upon themselves and determined the form and standing of the developing service. Very soon however it became clear that divergent responsibility and loyalty to patients and non-patients and professional colleagues were not easily compatible with official duties, and it came to be the view not only of central and local government, but also of the profession itself that medical officers of health should be free from the ties of private practice, a policy which has now received statutory recognition in Section 58 of the Local Government Act, 1929. The type of work in which the part-time medical officer of health was, and still is, engaged might bring him into conflict with owners of property and other persons of local influence—an undesirable predicament for a private practitioner—but perhaps a more important objection to his position was the duty it imposed upon him of visiting the homes of patients of other practitioners and possibly treating such members of the public in the local isolation hospital. For these reasons the profession generally had come to look with disfavour on such part-time appointments, even before the modern expansion of the service made them administratively inappropriate. This expansion, however, brought with it a new outlook in preventive medicine. Before 1907 the public health service was essentially concerned with environment and the control of the spread of infection. The Notification of Births and Education (Administrative Provisions) Acts of that year and later legislation, such as the National Insurance Acts, the Maternity and Child Welfare Act, the Public Health (Venereal Diseases) Regulations, and the Local Government Act, have placed duties on the shoulders of local authorities an essential feature of which is direct contact between their officers, as medical men and women, and individual members of the public in the capacity of patients or potential patients. It is true that curative medicine under such legislation is practised mainly with the object of preventing the spread of infection or of preventing permanent damage by the treatment of disease in its early and apparently negligible forms, and that much that passes between the officers and those who consult them is educational rather than therapeutic. Nevertheless, the medical profession has looked upon these developments from their inception with some uneasiness, and has suggested that, while work of this kind properly falls within the province of local government, private practitioners should in some way be engaged on its clinical side. The whole-time service of tuberculosis clinicians appears to be generally accepted, perhaps because it is realised that the magnitude of the problem and the variety of manifestations of the disease require specialisation and there is too small a field for specialists among the well-to-do to maintain a sufficient number of them in a private capacity. Venereal diseases are largely treated by specialists appointed as part-time officers. It is in the very large province of school hygiene and maternity and child welfare that controversy arises. Here the scope of the work is limited only by the embargo which the Acts place upon the establishment by local authorities of a domiciliary service of medical practitioners, and by such restrictions as may be exercised by the Government departments concerned. It is in these branches of public health that some private practitioners see scope for their employment. School medical departments have found it necessary to provide treatment for certain minor ailments and skin diseases, for diseases of the ear, nose, and throat of a less urgent but disabling character, for defects of vision, and for certain other diseases or defects requiring prolonged and expensive treatment. To a lesser extent the care of expectant and nursing mothers and pre-school children tends to drift away from its primary educational function into curative medicine. Whole-time medical officers, often engaged in both these branches of public health work, are to an overwhelming extent employed in them, and, indeed, it is correct to say that by far the larger proportion of the time of such officers nowadays is devoted exclusively to clinical work, if in this term are included the medical examination of patients, advice as to some of the pathological tendencies revealed by such examinations, and dietetic guidance and supervision.

It is claimed by some private practitioners that work of this kind is as much an evolution of clinical practice as it is of organised public health, and, indeed, that it will never attain its object until it is done by the family doctor who sees the members of the family in most of their ailments and ought to see them in all and to guide them in prophylaxis. This point of view is, in our opinion, incontrovertible. But it must be admitted that, for the vast majority of the people, the work which the health departments are now doing was never done before and that it would not be done now if fees had to be paid on the scale which the profession legitimately expects. It is work, too, which requires much time and patience and would suffer inevitably from the urgent interruptions of general practice, and some of it needs X ray and laboratory assistance which an organised service can more easily provide. While, therefore, it should be our aim to bring this aspect of preventive medicine within the range of the private practitioner's activities, it is not obvious how this end can be achieved under existing circumstances. If and when the benefits of insurance are extended to dependants and widened in scope, an opportunity may arise for bringing into one organisation the present clinical, or quasi-clinical, services of the local authorities and the domiciliary care which must always be the province of the general practitioner. In the meantime, any agitation for the employment of private practitioners on a part-time basis in public clinics may be tempered by the realisation that some, at least, of the objections to part-time medical officers of health are equally applicable to the type of appointment we are considering. Even if every practitioner were employed at the local clinics, each would see his colleague's private patients from time to time. But such wide employment of practitioners presents great difficulties of practical administration. We do not agree with our correspondent that it should be the prime object of local government to attain the cheapest form of organisation, but one, such as this, which could be made efficient only at undue expense is not easy to justify. When, on the other hand, a limited and manageable number of part-time practitioners is employed, the grievance of colleagues may be considerable, if the clinics are conducted in such a way as to attract a large number of their patients.

The position also of the whole-time medical officers of local authorities must be a matter of concern to the whole profession. A service cannot, in our view, be efficiently administered by those without actual experience of its working parts; otherwise there would be no argument against purely lay administration of health departments. There must be a reservoir of officers for senior administrative posts and it is hard to see where they can be trained except in the various executive sections of departments, including clinics. Further, the profession has welcomed the advent of women practitioners and taken steps to safeguard their interests. Many women are now taking up medicine with a public health career definitely in view. Experience has shown that many of them find their vocation in the whole-time work of clinics. The reasons must be very strong indeed which will lead us to close the door of this service against them. Nevertheless there is a growing conviction of the need for reformation of the whole of the public medical services, such as the extension of medical benefit might bring about. When it comes this may involve hardship for some of those who have mapped out their future in public health; but the doubtful advantages of a piecemeal resort now to part-time service would hardly justify the antedating of their misfortune.

DIAPHRAGMATIC HERNIA

ONCE a curiosity of the post-mortem room, diaphragmatic hernia has now taken its place as a condition of clinical importance. Thanks largely to the increasing accuracy of radiological diagnosis, it is now possible to have an exact knowledge, not only of the presence of such a hernia, but also of its nature and situation. The studies thus facilitated have so much increased our knowledge of the signs and symptoms that it is no longer rare for an accurate diagnosis to be made on physical examination and history alone. The varieties met with seem to fall into two main types. In infants diaphragmatic hernia tends to give rise to conditions of medical or surgical emergency—as for instance in the case reported by Dr. GREENWAY on p. 628 of our present issue, and in two lately described by N. R. BARRETT and C. E. W. WHEATON.[1] In adults, on the other hand, acute illness is less common than chronic ill-health with periodic aggravation of symptoms in attacks of increasing frequency. In a paper read before the Royal Society of Medicine last year Sir THOMAS DUNHILL[2] gave an account of some of the symptoms here encountered. There may be discomfort after food, which amounts to actual pain and vomiting, or there may be merely a flatulent distension; again, hæmatemesis may be the most prominent feature; while in yet another group of cases there are recurrent attacks of asthma. An interesting example of the case in which bleeding draws attention to the condition was described by R. DEMEL and annotated in our columns last year[3]; the patient was reduced to a condition of severe anæmia by repeated attacks of melæna. The similarity of the dyspepsia in diaphragmatic hernia to that characteristic of cholecystitis and gall-stones has been particularly noted by DUNHILL and by J. P. MONKHOUSE.[4]

A satisfactory classification of the various forms of diaphragmatic hernia is very difficult to achieve, but J. M. WOODBURN MORISON[5] has put forward a useful compromise between the purely anatomical and the clinical. Apart from the type of hernia which follows gunshot wounds of the chest and severe fractures of the ribs, those of most practical importance seem to be hernia through the œsophageal hiatus, hernia through an imperfectly

[1] Brit. Jour. Surg., January, 1934, p. 420.
[2] See THE LANCET, 1933, i., 803.
[3] Wien. klin. Woch., 1933, xlvi., 486; see THE LANCET, 1933, i., 1242.
[4] See THE LANCET, 1933, i., 1235.
[5] Proc. Roy. Soc. Med., 1930, xxiii. (Sect. Elect.-Ther., p. 23).

closed pleuroperitoneal canal (usually on the left side), and the condition known as thoracic stomach. The last-named is not a true hernia, for the underlying cause is generally supposed to be congenital shortness of the œsophagus. It is present from birth, but symptoms tend to be progressive, and may be severe enough to suggest a diagnosis of carcinoma of the œsophagus, gastric ulcer, or pernicious anæmia. Hernia through the œsophageal opening is of several different types; there may be a small para-œsophageal hernia of the upper end of the stomach, or a large part of the stomach may pass into the thoracic cavity, when the abdominal symptoms, such as epigastric pain and vomiting, will be associated with periodic attacks of dyspnœa, cyanosis, palpitation, or cardiac irregularity. TRÉMOLIÈRES, TARDIEU, and CAQUOT [6] have pointed out the importance of the relationship of these symptoms to meals, in contradistinction to their usual relationship to effort. They also draw attention to the peculiar type of dysphagia which may develop; they term it "dysphagie paradoxale," because it tends to be more pronounced with a small well-masticated bolus than with a large one. Two cases of the type of recurrent hernia through the hiatus œsophageus with which the name of Prof. VON BERGMANN is associated have just been reported by A. F. HURST.[7] This is a disease of old people and the cause seems to be senile change in the tissues around the hiatus, rather than any congenital abnormality. The hernia, almost always small, occurs either during recumbency or during stooping movements, and the patient learns that relief can be got by sitting bolt upright, or by rapid gastric distension, as by drinking aerated water or taking bicarbonate of soda.

A persistence of part of the pleuroperitoneal canal is, according to WOODBURN MORISON, the commonest structural defect, and the fault in much the larger number of cases is in the left posterior part of the diaphragm. This is the kind of defect present in the cases reported by BARRETT and WHEATON, and in GREENWAY'S. The symptoms are apt to appear in infancy, but it is always possible for the abnormality to remain hidden until in adult life interference with the abdominal pressure causes herniation of intestine into the thorax. As BARRETT and WHEATON describe them, there are two groups of symptoms. First there is interference with the action of the heart and lungs, most often shown by attacks of cyanosis, dyspnœa, or tachycardia which have a definite relationship to the times of feeding. This trouble is brought to a head when the intestine contained in the sac becomes distended, the orifice in the diaphragm remaining the same. Abdominal symptoms then supervene, and the interference with peristalsis is followed, usually after a distinct interval of a day or so, by paralytic ileus. In GREENWAY'S case intussusception was closely mimicked. In all these conditions very careful radiographic technique is required if accurate diagnosis is to be assured, and several observers have emphasised the importance of combining opaque meal examination of the intestine with screening of the chest, since it is necessary that the abdominal contents should be actually demonstrated above the diaphragm. In view, however, of the increasing possibilities of successful operation, it is worth studying in detail those points that lead to successful diagnosis.

[6] Presse méd., Feb. 21st, 1934, p. 292.
[7] Guy's Hosp. Rep., January, 1934, p. 43.

SIMPLIFIED PLUMBING

ONE of the most cherished beliefs of the nineteenth century has recently received what appears to be its death blow. At its meeting on March 6th the London County Council passed, for submission to the Ministry of Health, by-laws sanctioning the use, in London, of the one-pipe system of drainage, thereby throwing over the view that separation of washing water from closet discharges by trap and air space was essential to public health. Dr. CHARLES PORTER, medical officer for Marylebone, and Mr. W. H. DRAPER, his chief inspector, in an extremely interesting Bossom Gift symposium organised by the Chadwick trustees, expounded the one-pipe system, and incidentally threw light on how it came about that the separation of the two classes of waste liquids was made compulsory. It seems to have been a result of the attack of typhoid fever which King EDWARD contracted in 1871 after having stayed at a house near Scarborough where the drains were defective, and which so nearly proved fatal. The sanitarians of the day believed that many diseases were transmitted by "sewer gases," although it had not then, and has not since, been shown that the air of ventilated sewers differed in any material particular from other air. The belief was weakening towards the end of the nineteenth century, when the late Sir FREDERICK ANDREWES and Mr. J. PARRY LAWES found a meagre and uncharacteristic bacterial flora in the air of London sewers, and Sir CHARLES CAMERON wrote an article in the *Nineteenth Century* on sewers as health resorts. Certainly the men working in sewers—and gangs of men are more or less continually at work in the sewers of large towns—enjoy health as good as any other group of men exposed to damp and dark surroundings.

It must not be thought that the one-pipe system allows the escape of unpleasant, if not unhealthy, air into houses. The seal between house and sewer is as complete as under the two-pipe system. The primary distinction between the systems is (in the words of the public health committee's report to the L.C.C.) that in the one-pipe system drain air is in contact with the water content of the trapped outlets of the connected fitments—whether water-closet, slop sink, urinal, bath, lavatory basin, bidet, or sink—while in the two-pipe system drain air is in direct contact only with the water content of the trapped outlets of fitments receiving excretal matter from water-closets, slop sinks, and urinals. For aerial separation between the drain and the waste pipe conveying waste water from baths, lavatory basins, bidets, and sinks (and the water content of the trapped

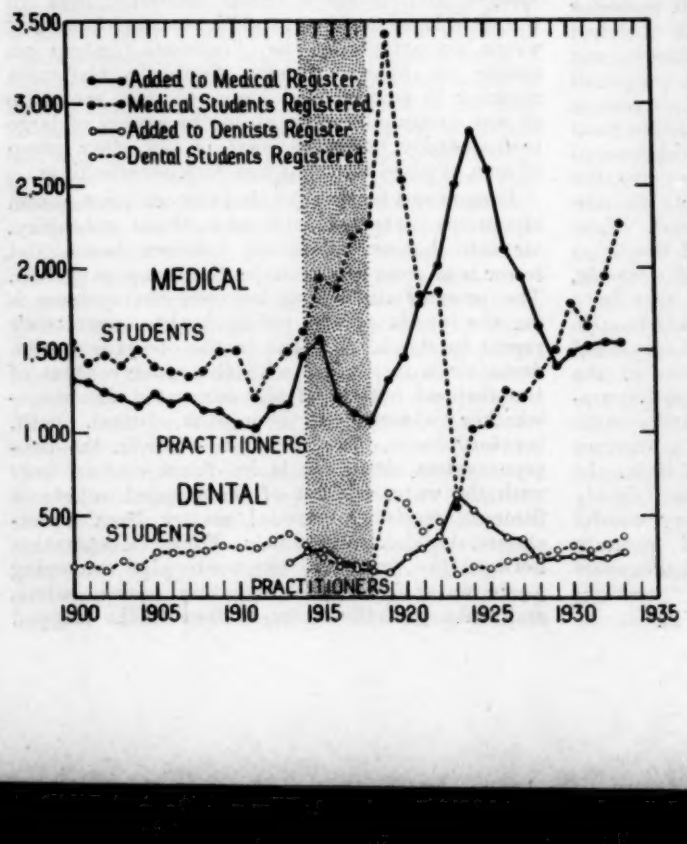
outlets) is secured by disconnecting the waste pipe at the point of discharge of the pipe over or into the trapped gulley. That is, instead of two separate systems of pipes, each sealed at every point by a trap offering a site for accumulation and leak, all liquid wastes discharge into one pipe—or, in a large building, one system of pipes—from which every appliance is sealed by a trap. It appears to be a real advantage that the pipes receiving excretal matter should be continually cleansed by large flushes of relatively clean water from baths and wash basins, and further, that it should not be necessary to carry all pipes to the outside of buildings. The adoption of the one-pipe system, which is common on the continent and America, necessitates a high standard of plumbing, good traps, and sound pipes of sufficient bore to take all possible simultaneous discharges without causing a backward pressure which might blow the seals of some of the appliances. It is interesting here to note that Mr. DRAPER, in the symposium referred to, stated that in America a 4-in. soil pipe with a 2-in. ventilating pipe was regarded as sufficient to take the discharge from 48 sanitary groups, each consisting of a water-closet with a 5-gallon flush, a bath, a lavatory basin, and a sink. He also quoted experiments, made by himself in a large building in his district, which supported this provision.

The new by-laws will no doubt be copied by other authorities. The simplification of sanitary systems combined with a high standard of construction will do much to bring the arrangement of hotel bedrooms fitted with bath and other equipment up to the standard of American and some continental towns, without the forest of pipes which gives pain to architects and would be frankly impossible in a country where winters were normally severe. An early step in the direction of doing away with numerous traps, each of which offered a point for accumulation and stoppage, was made by Colonel W. BUTLER, whose persistence, when medical officer for Willesden, secured the permissive instead of the compulsory use of the intercepting trap between house drain and sewer. The essential principle which should govern all house-drainage systems is that all waste liquids should reach the sewer as soon and as completely as possible, leaving the house pipes clean and filled with clean air.

ANNOTATIONS

THE PORTAL OF MEDICINE

IN the third week of March we are apt to receive from the registrar of the General Medical Council and the registrar of the Dental Board—offices now united in the person of Mr. Michael Heseltine—copies of the new Medical, Dentists, and Students Registers. These volumes are indispensable for reference and are being found increasingly useful for this purpose by public bodies of all kinds. But apart from the lists of names, the volumes have a particular value in giving a conspectus of the entry of students and qualified men to the ranks of the medical and dental professions. These numbers have undergone remarkable fluctuations during the last 20 years, and we take the opportunity of bringing up to date and reproducing a graph, showing the entries both of students and of practitioners, which has already appeared more than once in our columns.[1] In 1921 Sir Donald MacAlister pointed to the high tide of registration for medical study and expressed a misgiving whether a position had not been reached in which danger might arise to professional education and perhaps to professional careers from the mere number of students entering. That danger soon passed, the entry for 1923 being so small as to excite quite different feelings. But, as then surmised, the drop was no more than the trough succeeding the wave of the immediate post-war years, and due in some measure to the lessened entry of women students. During the last ten years the number of medical students registered in the United Kingdom has risen almost continuously, the number last year (1933) reaching a total of 2287, being largely in excess of what previous to 1914 was considered the entry necessary to replace wastage and to supply the needs of the public. The entry is one which must again awaken the qualms felt by the president of the General Medical Council some 12 years previously.



The position in regard to the dental profession is totally different. The entry last year (1933) was 383, nearly double what it was in 1925, since which time the increase has been fairly steady. It is, however, still quite inadequate to meet the wastage or to mitigate the situation which will arise when the effect of the immense accession under the Dentists Act of 1921 passes away. This situation

[1] THE LANCET, 1924, i., 579, and 1926, ii., 480.

is not fully manifest on the graph, which sets out only the entry of dentists registered with qualification. During the four years 1922–25 no less than 8435 names were admitted to the Dentists Register on a basis of practice without dental degree or diploma. Many of these dentists were already in advanced years and the wastage will be abnormally rapid. Last November Sir Francis Acland asked how many licentiates (which means a larger number of entrants) would be required to maintain a register of over 14,000; and his answer was 700. That discrepancy also gives occasion for thought.

THE COMPOSITION OF SWEAT

On Friday last in the section of physical medicine of the Royal Society of Medicine the Samuel Hyde lecture was given by Dr. B. A. McSwiney, professor of physiology in the University of Leeds. Water, he said, is lost from the skin in two ways—by evaporation from the epithelial surface and by secretion through the sweat glands. When water is evaporated so rapidly that it is not visible it is termed insensible perspiration. Sensible perspiration occurs when water accumulates on the skin more rapidly than it evaporates. The sweat may be strongly hypotonic in comparison with blood plasma but yet remove what may be large amounts of sodium chloride from the body. Under normal conditions 600–700 c.cm. are evaporated from the skin in 24 hours. The constituents of perspiration are very variable. The average values calculated by Vass and McSwiney from the examination of 14 male specimens and 10 female specimens are as follows:—

Subject.	pH.	NH_3—N.	Urea.	Amino-acid—N.	Glucose.	Chlorides NaCl.
		mg. per 100 c.cm.				g. per 1000 c.cm.
Female .	6·57	6·0	19·23	6·5	20·0	3·00
Male ..	6·14	4·7	21·44	5·0	12·6	3·70

Traces of creatine and creatinine have been found, and lactic acid was present in amounts not greater then 120 mg. per 100 c.cm. The divergence of opinion recorded in the literature as to hydrogen-ion concentration of perspiration can to some extent at least be accounted for by the readiness with which perspiration is decomposed even at ordinary temperatures by the bacteria normally present in it. Examination of the sweat shed by rheumatic subjects shows no marked divergence from the normal. In 1923 K. N. Moss directed attention to the relation of sweating to muscle cramp. He pointed out that with continual sweating the loss of chlorides was great, and if the subjects were working in hot places and drinking water freely symptoms of water poisoning might occur. Hancock, Whitehouse, and Haldane (1930) suggested that water poisoning was due to an alteration in the diffusion pressure of water in the body. The secretion of sweat is under control of the nervous system, the sweat glands being innervated by sympathetic fibres, and the nervous mechanism may be called into action by central stimuli, by reflex action, or by peripheral stimuli. Adrenaline, however, has no action on the glands, while pilocarpine excites and atropine paralyses. H. H. Dale has pointed out (1933) that the correspondence between anatomical origin and functional chemistry is not exact. Recent work suggests that the impulses are chemically transmitted by acetylcholine liberated at the nerve-endings which acts on the sweat glands.

COLLAPSE FOLLOWING MAGNESIUM SULPHATE INJECTIONS

Sulphate of magnesium has been occasionally used by surgeons for the purpose of promoting intestinal contraction or of enhancing the anæsthetic action of some other drug—and then given, not orally but by hypodermic or rectal injection. Some time ago an eminent London surgeon was in the habit, before closing the abdomen after operating for an acute peritonitis or obstruction, of injecting directly into the bowel a small quantity of magnesium sulphate in solution, believing that this would diminish the risk of paralytic ileus following operation. Epsom salts cannot, however, be given with impunity otherwise than by the mouth. A correspondent draws our attention to an incident which occurred many years ago in hospital practice. For a period of three months all the surgeons on the staff made it a routine to give two ounces of magnesium sulphate dissolved in four ounces of water per rectum, directly after the patient returned to bed from the operating theatre. Of forty to fifty patients so treated no less than eight were found collapsed within an hour of the injection and six of them died. When the rectal injection was abandoned there were no further instances of similar collapse. It may well be that the dose was excessive, but the experience should at least serve as a warning, especially as the same dosage was found to be lethal to laboratory animals.

DR. CROWLEY'S RETIREMENT

The retirement last month of Dr. Ralph Crowley from the medical service of the Board of Education should not pass without notice, for his 25 years at the Board have meant much for the children of the nation. He came to the Ministry in 1909 with a notable preparation for his task. Seven years before he had succeeded Dr. James Kerr as school medical officer at Bradford which, under the tutelage of these two pioneers—inspired no doubt by those remarkable women Rachel and Margaret McMillan—put into force the medical supervision of its school-children before there was any statutory obligation to do so. The two qualities of enthusiasm and vision characteristic of both these men survived in each case a long period of official life, and it has been noted that both possessed in a high degree the power of infecting others with their own enthusiasm. Dr. Crowley, when asked what he would regard as the greatest achievement of the medical department of the Board of Education during the last quarter of a century, has remarked that it was a period in which gross disease among school-children has been practically abolished. It may be true that the running ears, the defects in vision, the evidences of dirt and neglect, are still seen and are still to be prevented, but they are at least checked before producing the dire results formerly so common. Dr. Crowley himself is conspicuously fair in allotting credit for this revolution. In an address which he gave five years ago at Scarborough, dealing with the subject of health education, he created some surprise by pointing out that the doctor must decrease and the teacher increase. He explained later that he never had in mind that the teacher should in any way take on the work of the school nurse, although he was anxious that the teachers should keep on and extend further and further their practical observing and reporting defect, disease, and dirt in children. He would like the recording of height and weight to be a normal educational procedure of the school, and it was his conviction

that health education should be as much the concern of the teacher as any other part of the school curriculum. In an interview [1] given soon after his retirement Dr. Crowley pointed out just how he would like to see the educationist getting a further grip on the full meaning of health education in school life. This, he said, entails a welding together of its constituent parts, which are these :—

Up-to-date school surroundings; the daily practice of hygiene; the midday meal at school; the period of rest for younger children; the invigorating school shower bath; physical exercises, games, dancing, and swimming; the understanding by older children of the provision made by the community for individual and communal health; contact with nature; the intelligent placing of all health education on a scientific basis, provided by a reconsidered science course with a fresh understanding of the meaning and place of biology, of the study of life as it functions in plants, animals, in the child itself and in human beings generally; the development of opportunity for creative work in the daily life of the child.

At the Board of Education, and particularly as chief examiner of hygiene in the training colleges, Dr. Crowley was able to keep these principles continuously before the teaching profession. He took part in many of the investigations which have emanated from the Board's medical department, whether dealing with the health of the pre-school child, the evergreen question of enlarged adenoids and tonsils, the effects of posture, the problem of partially sighted children, and the inquiry into mental deficiency undertaken in conjunction with the Board of Control. He took an active part in the recent developments in this country directed towards ensuring the mental health of the child. He did not stay long enough to see the full development of nursery schools or the reorganisation within the elementary school which he so ardently desired.

THE TRAFFIC IN NARCOTIC DRUGS

THE Council of the League of Nations recently reviewed and expressed approval of the work of the Advisory Committee on the Traffic in Opium; but the representative of Poland remarked that the seizure reports prove the continuance of illicit manufacture of narcotic drugs in small secret factories, and urged that there should be no relaxation of the efforts of the Advisory Committee and of the Permanent Central Opium Board. Attention was specially called to the position in China and in "Manchukuo." A questionnaire is to be dispatched to the governments having concessions, settlements, and leased territories in China, as well as to the Chinese Government, with a view to ascertain the legislative and administrative provisions in force to restrict or suppress the illicit traffic in drugs. In the case of these territories, as well as that of the new territory of "Manchukuo" (which is party to none of the Conventions), resort is to be had to Chapter IV. of the Hague Convention of 1912, in order to restrict and control illicit traffic in raw opium, opium "prepared" for smoking, and of morphine, heroin, and cocaine. The principal manufacturing countries are to be warned to exercise the strictest supervision over any requests for the export of narcotic drugs, or of raw or prepared opium, to Manchuria and Jehol.

The Permanent Central Opium Board has again elected Mr. L. A. Lyall, the British representative, as its president, and Prof. Gallavresi, the Italian representative, as vice-president. The Limitation Convention of 1931 has now been ratified by China and Venezuela, and by France and the Netherlands on behalf of their respective colonies. Complete statistical returns of imports and exports had not been furnished to the Board by Greece and Colombia, and discrepancies in returns received from Switzerland and the Union of South Africa called for investigation. It is claimed that the work of the Board and the Advisory Committee "mark an important epoch in the development of methods of international coöperation in general."

[1] Published in the Schoolmaster and Women Teacher's Chronicle, Feb. 15th, 1934, p. 255.

NERVOUS COMPLICATIONS OF FEVERS

AT a joint discussion at the Royal Society of Medicine last week Dr. J. D. Rolleston gave his experience of diphtheritic neuritis in the 30 years since he published his thesis on the subject. This experience had convinced him that the frequency and severity of neuritis varies with the severity of the angina; mild cases of angina treated early with antitoxin do not develop paralysis. Although neuritis was more likely to occur where nasal was added to faucial diphtheria, it rarely followed diphtheria limited to nose or larynx. He regarded as of bad omen the occurrence of palatal and cardiac palsy during the first fortnight. These symptoms were probably due to direct involvement of the muscle rather than to neuritis, which was always a later symptom. The early affection of the heart might lead to cerebral embolism, resulting in permanent hemiplegia. A Babinski type of plantar response was however of no significance as it occurred at some period of the disease in most acute cases of diphtheritic neuritis. He had not found that the administration of serum after the onset of paralysis had any effect either on its duration or its severity, but he had no doubt that when given early in adequate doses serum prevented the appearance of paralysis. Dr. L. P. Laurent indicated the value of the oculo-cardiac reflex as a prognostic sign in diphtheria. During the first three or four weeks it tended to be exaggerated so that moderate pressure on the eyeball might even stop the heart for a few moments. This exaggeration when occurring early was a bad prognostic sign. Reversal of the reflex in the later stages of the disease indicated that the paralysis would be severe and of long duration.

The further discussion, introduced by Dr. W. G. Wyllie and Dr. J. G. Greenfield, centred chiefly on acute disseminated encephalitis and toxic encephalopathy. There is no doubt that the former condition has become much more common during the past ten years, and the interest aroused in it has given rise to the impression that the cerebral complications of the acute specific fevers are always due to lesions of this kind. Several speakers emphasised the fallacy of this view. For example, in numerous fatal cases of whooping-cough eclampsia, examined both in London and on the continent, no perivascular demyelination has ever been found, the lesions being toxic changes in the nerve-cells and capillaries of the cerebral and cerebellar cortex. The same is true of scarlatina. Even in diseases such as measles and chicken-pox in which acute disseminated encephalomyelitis is known to occur, acute cerebral symptoms may be the result of a toxic encephalopathy, or lesions of this type in the cortex may be associated with perivascular demyelination in the white matter. Sometimes it is possible to make a clinical diagnosis as to which type of lesion is present by taking account of the fact that the symptoms of acute disseminated encephalitis usually come on at an interval of 7 to 10 days from the onset of the fever, whereas toxic encephalopathy

may occur at any stage, even before the maturation of the rash. In other cases, as in whooping-cough, it is delayed till a late stage of the disease.

There is a tendency for certain symptoms to occur with special frequency in certain diseases. For example, anarthria or complete loss of speech is often found in cases following small-pox or vaccination and may continue until the child has become otherwise normal. Ataxia is specially common in cases following chicken-pox. The mortality-rate also varies with the primary disease. In the cerebral complications of small-pox and vaccination it is as high as 30 per cent., whereas it is lower in those following measles (10 per cent.) and varicella (6 per cent.). It appears that toxic or demyelinating lesions are more common causes of nervous complications in the acute fevers than vascular lesions which post-mortem statistics show to be uncommon. Even aseptic sinus thrombosis, unless very extensive or complicated by abnormal arrangements of the cerebral veins, may cause very few symptoms, and fatal cases of this kind are, fortunately, very rare.

PROF. DAVIDSON BLACK

THE death of Dr. Davidson Black, professor of anatomy at the Peking Union Medical College, in his fiftieth year, is a deep loss to science. He was one of the small and brilliant band of anthropologists who during the last 25 years have shed such light on the origin and antiquity of man. He made the remarkable discovery of that peculiar being which he termed Sinanthropus, but which is colloquially known as the Peking Man. Black named the creature when only a single molar tooth was known, and the position allotted to it in the phylogenetic tree by Sir Arthur Keith is low down in the human stem. Black was a Canadian and was educated at Upper Canada College and the University of Toronto. He was demonstrator of anatomy and subsequently assistant professor in the Western Reserve University of Ohio, a post which he resigned to take up a position in the Canadian Army Medical Corps. But during its tenure he came to Manchester with the special object of studying comparative anatomy under Prof. Elliot Smith. He became immediately fascinated with the researches being conducted there on the Piltdown skull, and Prof. Elliot Smith has recorded that Black determined forthwith to make similar studies his life work. At the conclusion of war he was appointed professor in neurology and embryology at Peking Union Medical College, a post which he held at the time of his death, and while there his researches established his fame as an anthropologist. He had been for a short period in bad health, but it was sincerely hoped that he would recover as he was fully engaged on remarkable researches at Chou-Kou-Tien, where Sinanthropus was discovered, and where vastly interesting deposits remain to be opened up. Though his career has thus been cut short, his contributions to the branch of science which he adopted and loved have secured for him a sure place in the story of its growth.

THE COLLECTED LITERATURE OF INFLUENZA

THE newest monograph [1] from the Pickett-Thomson laboratory, like its predecessors, is not merely a review of the literature; it contains as well the authors' personal investigations and their opinions, after considering the available evidence, on many aspects of the influenza problem. Only one of the two volumes on influenza is yet to hand; it is a massive tome, of which the first half contains sections on nomenclature, the history of influenza, its epidemiology, clinical manifestations, and immunity. The evidence is clearly put out and includes much interesting and valuable information. The rest of the volume is taken up with a consideration of the ætiology of influenza, and contains many beautiful photomicrographs illustrating the exhaustive researches pursued in these laboratories. Most workers will agree with the conclusion that the prime cause of influenza is a filtrable virus. The conception is, of course, not a new one, and from time to time in the past evidence has been produced in its support. But it is the recent work of Smith, Andrewes, and Laidlaw of the National Institute of Medical Research [2] which has removed practically all doubt on this score. Naturally, this does not imply that the various cultivable bacteria—Pfeiffer's bacillus, streptococcus, pneumococcus—which have been isolated from cases of influenza are negligible. They are of the greatest importance as secondary invaders, and the possibility of their being passed from case to case with the virus, a possibility which is supported by the findings of Shope in swine influenza, is given due prominence by D. and R. Thomson. *Bacterium pneumosintes* alone amongst the various cultivable organisms isolated from influenza seems to be unplaced, and it certainly would seem to have lost all claim to be the primary causal agent.

In suggesting that the chief value of this monograph lies in its collection of the vast literature on the subject, we do not intend to decry the immense labour which the research staff of the Pickett-Thomson laboratory has devoted to the study of the bacterial flora of influenza, but rather to draw attention to the magnificent bibliography which they have assembled. It will appear, we understand, in the second volume of the monograph and will cover over 4000 articles.

THE VIRUS OF CANINE DISTEMPER

USING dogs reared in isolation from puppyhood and kept under good environmental conditions, D. R. A. Wharton and Martha W. Wharton [3] have not only confirmed once again the filtrability of the causal agent of canine distemper but have been led by their results to go further than previous workers in emphasising the complete absence of noticeable symptoms and lesions in cases of pure virus infection. Changes regarded by Laidlaw and Dunkin as typical they ascribe to secondary complications "due to the climatic conditions under which experiments were performed." They suggest that distemper is primarily a disease of blood-cells, and that the disease can be distinguished from bacterial infections by the onset of anæmia and hypoglycæmia. The erythrocyte count, the hæmoglobin, and the sugar content all begin to fall immediately after artificial infection, varying independently of one another, but it is the diminution of all three which they have found characteristic of the disease. A differential white-cell count shows an absolute or a relative polymorphonucleocytosis and generally a lymphopenia. It was found that the blood ceased to be infective immediately the blood-sugar content began to rise again. The experimental data here recorded suggested that the virus of dog distemper is intimately related to the erythrocytes, affecting

[1] Annals of the Pickett-Thomson Research Laboratory. Monograph XVI. Part I.: Influenza. By D. Thomson, O.B.E., M.B. Edin., D.P.H. Camb., and R. Thomson, M.B. Edin. London: Baillière, Tindall and Cox. 1933. Pp. 640. 42s.

[2] THE LANCET, 1933, ii., 66.

[3] Amer. Jour. Hyg., January, 1934, p. 189.

the glycolytic enzyme and the factor controlling the destruction of hæmoglobin. Since the amount of glycolysis (measured in vitro) appeared to depend upon the amount of virus present and not upon hæmopoietic changes, the glycolytic activity was used as an index of the survival of the virus. The fact that the addition of hyper-immune serum did not affect glycolysis led the authors to believe that the virus is contained within the erythrocytes, where the serum cannot penetrate. On this hypothesis in-vivo neutralisation of the virus would take place in the plasma as infected cells were broken down. A method of diagnosing canine distemper independent of animal inoculation or clinical opinion would be of great value to the veterinary practitioner and it is to be hoped that these observations will be repeated independently and confirmed.

THE LATE PROF. PINARD

Adolphe Pinard, to whose death on March 1st in his 91st year brief reference has already been made, was born in 1844 in the village of Mury on the upper reaches of the Seine. When the authorities decreed the organisation of maternity services in Paris, he was one of the first official accoucheurs to be appointed. It was at this time that, under the influence of Tarnier, Pasteur's principles were revolutionising surgery and obstetrics. Pinard threw himself with tireless enthusiasm into his work, but it was not till events brought him to the Baudelocque Clinic that his genius had full scope and he was able to develop his special gifts as a teacher and reformer. About the turn of the century he diverted his energies from obstetrics to pædiatrics, having in the meanwhile stamped his personality on the former to such a degree that he and the modern conceptions of obstetrics were inseparably associated with each other in the minds of the medical students of several generations and many countries. The last 30 to 40 years of his life were devoted to puericulture whose scientific development has done so much to reduce the infant mortality of France. He waged ruthless war on bottle-feeding, the sucette, and all the other abuses of ill-omened tradition; and in his lecture room he had engraved in letters of gold: "The mother's milk belongs to her child." About a year ago he was the central figure when the President of the Republic opened a magnificent new school of puericulture, and he then seemed almost as active as ever. Soon afterwards, however, he began to age rapidly, and his death came as no surprise to his more intimate friends. If he had any great disappointment in life, it was perhaps connected with his political career. In the Chamber of Deputies, where he was elected a vice-president, he discovered that mothers and babies have no votes; and finding after eight years that he could not pull his weight as he had hoped he would, he refused re-election in 1928.

THE ALPS FOR CHILDREN

A YEAR ago we were able to give some account[1] of the Swiss extension of the Birmingham Children's Hospital, made possible by the loan for this purpose of the Buol château overlooking Davos-Dorf, which is owned by Mr. Christian Kunzle, president of the hospital. At that time 53 children had been sent out to the Swiss alps, and the number mentioned in the report of the hospital, just issued, has grown to 80. Of these, 25 were selected on account of chronic recurrent bronchitis and interstitial pneumonia, 17 were asthmatic, 16 had failed to pick up after prolonged illness, while 22 were suffering from various forms of localised tuberculosis. The daily average of children at the château has been 34, and 41 cases have now been sent home cured. Of these 13 stayed three months, 4 four months, 8 six months, 8 nine months, and 8 thirteen months. The scheme was frankly started as an experiment, but the hospital committee of management says that the results already obtained have exceeded expectations. The condition of the children who have returned has convinced the medical staff that equal benefit could not have been gained in the same period of time in England; in some cases it is recognised that the only chance of a permanent cure lies in a prolonged stay at a high altitude. As was to be expected, some cases do better than others, and experience is teaching that careful selection is necessary if the scheme is to be worked to the best advantage. There has been talk of enlarging the scheme in order to open its benefits to children from other parts of the country—Mr. Kunzle and his son have in fact ensured continuity by covenanting to give a sum of £5250 each, spread over a period of seven years—but the direction of further development remains to be announced.

[1] THE LANCET, 1933, i., 538.

Lord Dawson's Bill to regulate the sale, display and advertisement of contraceptives passed the House of Lords on Tuesday. A report of the third-reading debate will be found under the heading of Parliament.

WE regret to announce the death of Surgeon Vice-Admiral Sir William Norman, medical director of the navy from June 1st, 1917, to June 1st, 1919. The event occurred at Plymouth in his 79th year.

WE are asked by the Munich publishers, J. F. Lehmann, to state that the long-expected commentary on the Law for the Prevention of Hereditary Disease is appearing in the latter part of the present month. The commentary is by Dr. med. Arthur Gütt, Ministerial Director in the Ministry of the Interior; Dr. med. Ernst Rüdin, formerly professor of psychiatry and director of the research institute for psychiatry in Munich; and Dr. jur. Falk Ruttke, director of the Public Health Commission in Berlin. The book will contain appendices on the technique of sterilisation in man by Prof. Erich Lexer, and in woman by Prof. Albert Döderlein, both of Munich.

ON Tuesday last Sir Francis Fremantle, M.P., as chairman of the Parliamentary Medical Committee, introduced to the Minister of Transport a deputation, including Lord Moynihan and Dr. A. B. Howitt, M.P., on the subject of statutory compensation of hospitals and medical practitioners for road accidents. Mr. Oliver Stanley was told very frankly how intolerable is the present position. More than half the beds at many cottage hospitals are occupied with road accident cases. Motorists hesitate to make any payment to a medical man for fear it should be construed as an admission of liability. Doctors are moving away from houses at busy cross-roads because they are being called out at all hours of the day and night without thanks or payment. Lord Moynihan has pointed out that at a cost to the motorist of 2*s.* per year, or less than ½*d.* a week, doctors could be guaranteed a 12*s.* 6*d.* fee and the hospitals paid for emergency treatment. Mr. Stanley intimated that the title of the Government's new Bill will be so widely drawn as to make it possible to accept amendments meeting the objects desired by the deputation, and already embodied in the Bill for which Lord Moynihan secured a third reading in the House of Lords last December.

THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures at King's College Hospital Medical School, to be completed in the Summer

XX.—PREVENTION OF RESPIRATORY AFFECTIONS

THE term respiratory affections requires some explanation. Of course respiratory infections include conditions affecting the lungs, such as bronchitis or pneumonia, the trachea and larynx, with the diseases to which they are heir. Between these structures and the free air lie the nose and upper pharynx, and these, and frequently the open mouth, are the channel for air entry, and so for air-conveyed diseases. Infections of any of these structures must be considered as respiratory infections. Indeed, it may be said that, except for the infections conveyed by food as typhoid fever or by direct contact as venereal disease or by the intervention of an intermediate host as the mosquito, all known diseases can be transmitted by this path.

Of the diseases so transmitted, some produce affections localised to the upper part, nose and pharynx only; others have mainly a local seat, spread elsewhere either by toxin absorbed as diphtheria, or by direct spread or inhalation, as bronchitis and broncho-pneumonia; while yet others, such as poliomyelitis, pass through without giving recognisable proof of local changes and damage parts at a distance. Some of the diseases—e.g., tonsillitis—may be so mild as hardly to inconvenience the individual, while others—e.g., acute rheumatism—cause the very gravest injury though at the commencement the onset would appear identical.

Respiratory diseases are responsible for a large part of the mortality- and disablement-rates. The Registrar-General's reports show that circulatory diseases together with respiratory diseases account for two-fifths of the total deaths. The mortality from circulatory disease is somewhat the greater and is increasing, but from respiratory disease is slightly diminishing.

It has long been appreciated that acute respiratory

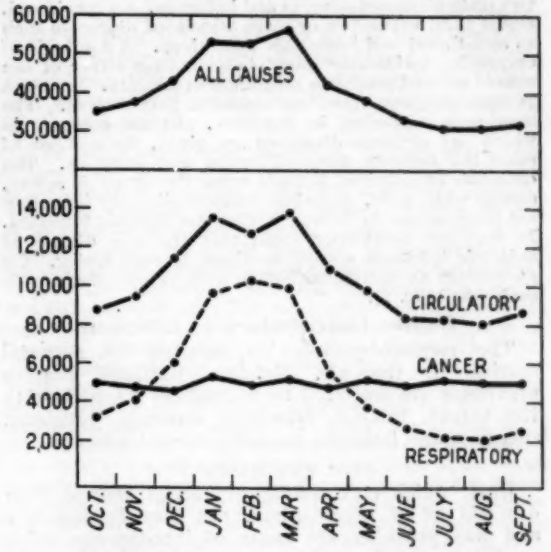


FIG. 1.—Monthly death-rates, for the year 1931, from all causes and from three selected diseases. (Compiled from the Registrar-General's Statistical Review of England and Wales for 1931.)

infections cause deaths at the extremes of life. Comparing bronchitis, pneumonia, and "influenza with respiratory symptoms," bronchitis is dangerous in infancy and increasingly fatal above 60. Pneumonia is most devastating in the first year of life, is not severe during adolescence, the death-rate rises steadily after 25. Influenza with respiratory symptoms tends to preserve a steadier death-rate which rises slowly like that of pneumonia after 25. The effects of all of these are least in adolescence and early adult life. As a contrast, the highest death-rate from pulmonary tuberculosis is from 15 to 30, there being a rapid fall after 45.

The total death-rate is increased during the cold months, and this change is shown clearly not only in the curves of respiratory disease, but also in that of circulatory disease, and to some extent even in that of cancer. The reason for this is that an infection is the commonest cause of decompensation in any chronic condition whether it be disease of the heart, liver, or kidneys, and a cold, the commonest of the infections, is especially liable to occur in the winter months (Fig. 1).

In addition to being a heavy cause of death, respiratory diseases account for more than a third of cases of sickness causing disability.

A curve depicting the frequency of minor respiratory affections shows that in each year there are two peaks, one in the early

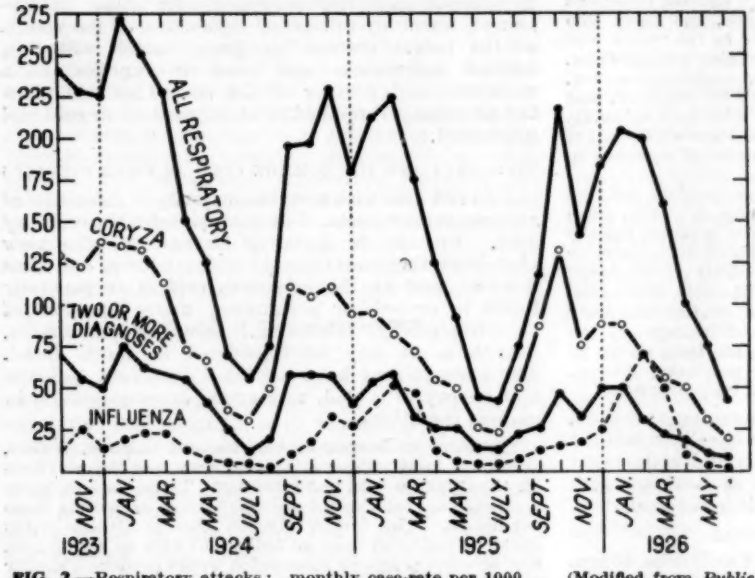


FIG. 2.—Respiratory attacks: monthly case-rate per 1000. (Modified from *Public Health Reports* of United States Public Health Service, 1933, vol. xlviii., No. 38.)

cold weather—October or November—and the other in February. These peaks are constant, though the number of cases occurring at these times in different years varies considerably. The figures on which these curves are based are compiled from data in which the two main diagnoses—coryza and influenza—are considered, and a third where two or more associated diagnoses such as sore-throat and bronchitis were given. A diagnosis of coryza is considerably more common than either of the other two, and reaches a maximum in autumn. Influenza is at any given time less common than coryza. The maximum is reached in February. In the category in which two or more diagnoses are given, the number of cases lies between those of coryza and influenza. The diagnosis of influenza is made when the attack is severe, coryza when mild, and since these respiratory infections are more severe in February, they are labelled influenza. It does not necessarily mean that the true disease of epidemic influenza always flourishes in each spring. On an average an individual suffers from two to three colds each year (Fig. 2).

Causes Contributory to Infection

The respiratory tract is infected by material carried in the air. Moisture particles bearing organisms are scattered by individuals when clearing the throat, talking, especially shouting, coughing, sneezing, and laughing, so-called droplet infection.

DUST AND DROPLETS

Dust, which may convey organisms derived from droplets or of other origin, can also be infective and was probably the cause of sore-throats which used to occur in early summer with the first dry hot weather. In addition, the tonsils and pharynx may be infected through the lips and mouth by eating and drinking utensils, so-called "dishwash infection," changing pipes, moistening rubber teats or comforters, or by kissing.

Much work has been done on droplet infection. Although the inspired air contains many organisms, with quiet breathing expired air is to all intents and purposes sterile, and even when the respiratory passage is infected, if not containing much moisture, relatively few organisms are exhaled providing breathing is quiet. The degree of moisture in the upper respiratory tract varies considerably. It is increased in cold weather when the function of moistening and warming cold air is active, and also when as a result of infection the surface is hyperæmic and performing its natural function to an abnormal degree. Apart from these conditions, there are natural variations of this moisture in different individuals, and those who have it developed to an excess seem to be the people who want to get closest to others to whom they are speaking. In any case violent expiratory efforts, coughing, sneezing, laughing, cause a storm of droplets to be dispersed, and even talking quietly, and much more with loud speaking, singing, or shouting, will produce a shower which will of course be the more when the conditions of moisture in respiratory passages is in excess.

It has been shown that the larger droplets tend to fall to the ground within 3 ft. in talking, 6 or 7 ft. when coughing, and within the course of a few seconds, but the smaller may remain floating for periods of 30 minutes or longer, and may be caught by currents of air and dispersed widely. These particles contain epithelial scales, leucocytes, and organisms. Many of the latter are detrimentally affected by drying, which is some advantage to the uninfected. On the other hand, dust has been shown to contain living organisms capable of producing disease, which in many cases have been derived from droplets.

The old-fashioned method of sweeping the floor, even with damp tea-leaves, was an excellent method of redistributing dust. It has largely and with reason given place to various forms of apparatus which do collect the dust and do not waft it into the air.

CONDITION OF EXPOSURE

The duration of exposure to a continuous source of infection is nearly as important as the dose of the bacteria. Thus continuous, rather than intermittent exposure is more likely to lead to becoming infected—i.e., being shut up in a railway carriage for several hours with a single sneezing fellow-passenger rather than attending three-quarters of an hour lectures with several coughing colleagues, an interval occurring between the successive incarcerations. On the other hand, a single excessive dose may be effective—e.g., from a coughing individual whose throat is being examined. One of my old teachers would never look at a throat but through a sheet of glass.

The stage to which the infection in the distributor has arrived may also be important. It is generally held that during the incubation period the individual is slightly infective at the beginning of the period, but becomes more so as the attack approaches and develops, and is most dangerous to others during the early hours and days of the disease. There is also much variation in the relative virulence of the infections. A short exposure of children to those incubating measles, chicken-pox, or whooping-cough is likely to result in an attack, whereas adults generally escape infection, even when in close contact with the acute stage of pneumonia.

The condition of the recipient of the infection is also important. It is obvious that a person in poor general health, recovering from an illness or suffering from malnutrition or some chronic ailment, even though perhaps not more liable than others actually to acquire the disease, will, if infected, certainly fail to resist and will suffer the more eventually.

CARRIERS

It has been shown that an epidemic is likely to be precipitated when the carrier-rate rises from a low percentage, say 2 per cent., to a figure of 20 per cent. or 30 per cent., and that the carrier, although not obviously ailing, is more liable to succumb to attack than the normal and to suffer more severely when infected.

What causes the carrier-rate to rise—i.e., what is the reason that the number of people who harbour a given pathogenic organism in the upper respiratory passages should be increased—is not known. The rate is liable to increase in winter and decrease in summer. Cold air stimulates the nasal mucosa to hyperæmia and hypersecretion. In these circumstances warm air will cause contraction of the vessels of the turgid mucous membrane which will then become œdematous and cease to function as a moistener and purifier of the air. This will allow the air-passages supplied to be exposed to air cold and unpurified.

INFLUENZA AND THE COMMON COLD AS VIRUS DISEASES

I do not deal with even the majority of infections of the respiratory tracts. The commonest is the ordinary cold. Opinion is inclining strongly to the view that both the common cold and influenza are virus diseases, and as the infectious cold is so generally found to precede or accompany many infections of the respiratory tract—e.g., sinusitis, pneumonia, bronchitis—it may be considered in more detail. The more so as I have indicated how very common is a history of a cold, as starting decompensation in chronic conditions.

The work of Dochez in America and Laidlaw, Wilson, Andrewes, and others in this country has thrown light on the common cold and influenza. These workers make a strong case for ultramicroscopic viruses as causing these conditions. The former showed that a filtrable virus could be collected from an individual with an acute head cold or coryza, and by inoculation would produce a similar condition in human volunteers, as well as in the chimpanzee.

The virus could also be cultivated outside the body and after numerous passages through living cell media could produce a typical attack. The English workers have produced a characteristic attack in ferrets from patients with influenza, but not from the common cold. Though similar, the two viruses are probably distinct.

Beyond the importance of this new discovery as such, there arises the great importance of secondary or associated infections. In experimental infections with either organism it appears that the illness produced by the virus alone is of short duration, limited in area of infection but of varying intensity, thus differing from many instances of the natural cold which may be prolonged and with an extensive area infected by secondary organisms. These facts may be illuminated by the condition known as swine influenza. From this infection, an ultramicroscopic virus and also a small non-filter-passer bacillus can be obtained. Inoculation of either alone gives a negligible infection, but when combined an attack of considerable severity. This is the common experience with colds, all may have an acute onset but whilst some subside readily with no evidence of extension, others travel round the larynx and respiratory system, infecting the sinuses or bronchial tubes or parenchyma of the lung with pyogenic organisms. Another finding is of interest. In the early days of the common cold, the nasal air-passages will generally give a sterile culture, even though previously positive; but after a time, if the cold does not subside, the culture will grow one or more of the organisms commonly found in upper respiratory infections—pneumococcus, streptococcus, micrococcus catarrhalis, or influenza. This fact strongly suggests that the processes occurring in the common cold and possibly in influenza may depend upon (1) the infection by the ultramicroscopic virus alone, or (2) the associated or subsequent effect of another organism.

It is not at present suggested that the presence of an ultramicroscopic virus is essential to initiate every respiratory infection. Such may be the idea in the future. It is known that with a rise in the carrier-rate, there being no reason to suspect the presence of an ultramicroscopic virus, the virulence of the organism may be enhanced, and this would suggest that the resistance of the individual may be overcome thus leading to infection by the carried organism without any additional factor. It has been shown by Gaskell that a descending tracheal and bronchial pyogenic infection of varying virulence and dose explains the several forms of pathological changes occurring in the lungs producing bronchitis, broncho-pneumonia, croupous pneumonia, or septicæmia. The recognised organisms, especially the streptococci, less frequently the pneumococci, can be obtained from the upper respiratory tract of many people, more commonly in winter, and in urban districts as opposed to rural. In these, infections may occur without the association of a virus.

Natural Methods of Preventing Respiratory Infections

When considering the question of prevention, we should first appreciate the means which nature employs. Air inspired may according to circumstances carry large numbers of organisms, pathogenic and non-pathogenic. Air naturally exhaled is sterile, or nearly so, and in addition is warmed and moistened. The first defence lies at the entrance to the nose, the vibrissæ or hairs which are situated there and are covered with mucus. These entangle foreign substances. Next we meet with the mucous membrane of the nose and pharynx, a membrane lined with ciliated epithelium whose purpose is to waft along the thin layer of mucus which covers them, and on which foreign substances such as bacteria are entangled. There are definite lines of current set up by the ciliæ which waft the mucus from the nose to the pharynx in the neighbourhood of the posterior pillar of the fauces. Here the swallowing reflex enters into action and the mucus and contents are swallowed. The same is occurring in the nasopharynx.

Two points are of importance here. If there is a breach of continuity of the sheet of cilia, even though this area is covered by non-ciliated epithelium, a dry spot exists at which the mucus is held up and forms an obstructive dry crust liable to produce ulceration. Again, damage to the superior constrictor of the pharynx, or the presence of scar tissue—e.g., as the result of operation for the removal of adenoids—diminishes the swallowing action, mucus will not be swallowed but will accumulate in the nasopharynx, especially at night, and there stagnate with increase of bacteria. Not only the direct passage of the nose, but also the sinuses opening into it, are lined with ciliated epithelium which direct currents of mucus into the nose and so down to the pharynx. In the larynx and bronchial tubes the same mechanism is at work, mucus and cilia. Glands and goblet cells produce the former, cilia are present the whole way up from the smaller bronchioles to the upper opening of the larynx. The movement is from below upwards. The weakest part of the respiratory system is the last part of the fine bronchial system because it is lined with cubical non-ciliated epithelium which is non-phagocytic, and so is defenceless. Beyond, the large cells lining the alveoli are strongly, though leisurely, phagocytic. Cilia are susceptible to noxious influences. Anæsthetics, such as chloroform, tend to paralyse their movement, and a weak acid, such as might be present as the result of SO_2 in the atmosphere of a thick London fog, might act in a similar manner. Cold also diminishes their activity.

Mucus probably has not a bactericidal action, but may temporarily inhibit growth; when expectorated, it is found to contain polymorphonuclear cells and large mononuclear cells which contain bacteria, and therefore have a protective function. Tears containing lysozyme are for a time bactericidal to some organisms.

It is questioned whether the air in the larynx, trachea, and bronchi contains organisms. Though a large number of organisms are eliminated in the nose and nasopharynx some probably at odd times, and certainly on some occasions, get down to the larger bronchial tubes.

Lister observed long ago that a pneumothorax opening into a bronchus was not likely to go septic.

Factors Injurious to Natural Resistance

The air-passages therefore are by no means defenceless and where operations are undertaken care should be exercised not to damage mucous membranes, so producing dry spots in nose or nasopharynx and atrophic rhinitis, or to damage the musculature of the pharynx. Operations are not the only form of injury to which these structures are exposed. The habit of inhaling cigarette smoke in many cases sets up chronic irritation of the nasopharynx, larynx, and nose, and should be discouraged as increasing the liability to harbour infection. A pipe with less facility for inhaling is better, and 2 oz. of tobacco a week is a moderate amount; 10 or 15 cigarettes a day is also a moderate quantity. Smoking should be discouraged in the young, for as with alcohol a deleterious effect is more likely to occur in latter years the younger the individual commences. Those who begin at 35 or over seem to tolerate larger quantities with impunity. I am not sufficiently optimistic as to suggest this as an age prior to which smoking should not commence, or alcohol be taken.

The better the general health, the greater the resistance preventing infection. Attention to this

appears to be *the* one method of counteracting the rise in carrier-rate which heralds an outbreak. Attention has been drawn in preceding lectures to the value of fresh air, ventilation and proper dietary, and exercise. Stress may be laid on the importance of allowing a time for digestion after the meal. Much harm arises from the hasty breakfast and rush in the morning as a result of anxiety not to be late. In most cases this follows getting up late, for which many explanations are given. Mental effects on digestion are well known and absence of opportunity for action of the bowels is liable to lead to constipation, and so the general health suffers.

A glass of milk at 11 A.M., or if not tolerated then, at the midday meal, is useful for underweight or for the poor breakfaster. It is unnecessary, and may be harmful, to those past the middle period of life. Instead, creosote minim i., Ol morrhuæ 3 i. may be taken thrice daily at the end of each meal during the winter. This used to be a popular treatment in former days, and we now see a reason for this empiricism.

In these days of thin shoes, some provision should be made against wet feet. Even though the stockings or socks are not actually damp, the impregnation of the sole with water produces cold feet. Sitting with wet or cold feet all day cannot be good and may tend to lower resistance, either directly or by the mental effect of the discomfort. A dry pair of shoes and stockings should be kept at the office. The sole may to some extent be kept water free, if, when dry, it is warmed in front of the fire and then treated with an animal or fish oil which will impregnate the leather and prevent water from being absorbed.

FRESH MOVING AIR

Fresh air is all the more important in these days when travelling is largely in closed vehicles, as 'buses, trams, tubes, and the nature of work necessitates confinement in offices, many of which do not allow of sufficient light, space, or ventilation.

To compensate in some measure, as much air as possible should be obtained at night. Windows should be open top and bottom and the bed should not be placed in the corner furthest away where the circulation of air is negligible. The down draught often complained of on the head if the bed is against a wall is not felt if the bed is pulled a foot away from the wall. For those who get frequent colds, or who are suspect of pulmonary tuberculosis, the bed may be built up so that the head of the sleeper rests on pillows actually lying on the window sill. The window is propped up and an awning arranged outside to keep off rain and snow. After a short time this régime is appreciated by reason of improved well-being. It can be strongly recommended, not only for those with recurrent colds, but also for the tuberculous returned from a sanatorium, bronchiectasis cases, and others who benefit from sanatorium treatment. Summer or autumn is the best time to institute the treatment. When the weather is inclement strong objections may be raised against beginning it, but if once begun it is not likely to be given up.

Spacing of the beds is of importance where a bedroom is occupied by more than one person, for it is not possible to say when an individual is developing an infection and beginning to distribute organisms by droplets.

Regarding the effective range for heavy droplets as 3 ft., this space at the very least should be allowed on each side of the bed; lighter spraying may carry 7 ft. or more. The bed itself is 2 ft. 6 in. to 3 ft. wide. It is generally agreed now that floor space 10 ft. by 10 ft. should be allowed for each bed, which gives a distance of approximately 7 ft. between adjacent beds. By arranging the beds so that the heads and feet of alternate beds are next the wall, an increase of distance between heads may be obtained. If an epidemic traceable to a dormitory arises it implies overcrowding, and the bed space should be increased by sending every other of the inhabitants to a new ward. Infection need not necessarily occur in bedroom or dormitory. It may occur at other times, the office, train, or class-room. It is, however, found that where cubicled dormitories are employed spread of infection is certainly the less, and that day boys or home boarders escape whereas the boarders are infected.

BED TREATMENT OF COMMON COLDS

The public is becoming educated to the knowledge of droplet infection, and employers to the risk of infection to the whole body of their employees by one of their number. Signs of disapproval and apprehension can be observed when a red-nosed individual enters a public vehicle and commences sneezing or coughing, and a cold is accepted as an excuse for a few days' absence when formerly an appearance at the office would have been expected. Many offices do not invite a medical certificate until the employee has been absent over a week. In institutions also custom is changing; whereas formerly it was "the thing" to carry on with an acute infection and temperature as long as able, individuals are not now discouraged from reporting sick. This is an advance in the right direction, especially in hospitals.

I have before related the instance of an operating day when one of those assisting was developing an acute cold. Of four patients on whom operations were performed, three developed respiratory illnesses and two died. It is equally important that an operation due to be performed on a patient, who at the time is found to have suggestions of a respiratory infection, should if not urgent be postponed. There is also a heavy risk to patients other than operation cases when a nurse or medical officer is infective.

Those who are developing colds should go to bed at once and stay there for 36–48 hours after the temperature has fallen. They will not be spreading the infection broadcast during the most infective period, and will generally have passed this period when they do get out, and will have cut short the cold and have avoided the risk of complications. Instead of the custom of reporting sick only when unable to carry on, I should like to see a control experiment in which every member of an institution was obliged to report on the earliest symptoms of a cold and be put to bed for 48 hours at least, more if necessary.

SPRAYS, DOUCHES, AND MASKS

If obliged to be in the company of someone developing a cold, it is well to let him or her know that you understand the danger of the position and to keep out of the line of fire and the direction of the air currents, and see that when coughing or sneezing a handkerchief is applied to the face. It is also advisable not to stay in such company for too long periods, but to get away for a quarter to half an hour during each hour, and to insist on free ventilation.

Some believe that, after being in the presence of an infected person, medicated sprays prevent acquiring a cold. It is very doubtful. There is no harm in trying mild oily solutions in an atomiser. During the acute stage of a cold in the head nasal douches should not be used. When the temperature has fallen, the acute symptoms subsided, and the sticky stage reached, a bland alkaline douche night and morning will dissolve off the thick mucus. It leaves the nose comfortable and with a freshened mucous membrane more capable of exercising its function as a filter. Formerly this was much advocated. Nowadays it is taboo. I have not seen harm follow providing the lotion is run in from a tablespoon, i.e., slowly, in small quantity, and under very low pressure, and—most important—no effort is allowed to blow the nose or get rid of the liquid during the douching or for ten minutes after the procedure is complete. It cuts short the after-effect of the cold and prevents spread of infection and delayed convalescence.

When considering the official public health aspect we have to realise that the air, the medium through

which the respiratory infections spread, cannot at present be attacked as can milk and water, which carry infections such as typhoid fever or the mosquito in the case of malaria. Education of the public should be intensified on the manner of spread of these conditions and on the advantage of early treatment. There is much less coughing and spitting than formerly, both could be further diminished. The newspapers record convictions for travelling without a ticket. Prosecutions for infringing the by-law against spitting are not so frequent.

Compulsory wearing of masks to prevent influenza has been tried in Australia but without success. The gauze was soon saturated with moisture, became thoroughly unpleasant, and was discarded. One of the medical men who was summoned for not wearing a mask threatened an action against the Board of Health for "interfering with his liberty." The general opinion is that this method is useless. It is more likely to be effective against spread of organisms when worn by the infected than against acquiring infection when worn by the healthy.

Drugs such as quinine have been tried as a prophylactic. The result is doubtful.

VACCINES

The effect, as a preventive, of anticatarrhal vaccine is disputed; the statistics are unsatisfactory. It cannot be substantiated that vaccines prevent the incidence of these respiratory infections. Nor is there reason for thinking that it should do so, if we eventually accept the view that these colds are due to a virus. Such is not contained in the vaccine. There is a general opinion that the present-day vaccine may prevent or render complications less severe and diminish the period of disability. There are some statistics to support this thesis. (The accompanying Table illustrates Dr. L. R. Lempriere's favourable

Haileybury (1926). Three Inoculations in January

—	First term.	Second term.	Third term.
Boys in school—			
Inoculated ..	220	220	200
Non-inoculated ..	315	315	335
Colds	160	35	86
Inoculated ..	50 (22·7%)	10 (4·5%)	18 (9·0%)
Non-inoculated ..	110 (34·6%)	25 (8·0%)	68 (20·0%)
Feverish chills ..	33	17	51
Inoculated ..	10 (4·5%)	4 (1·8%)	16 (8·0%)
Non-inoculated ..	23 (7·3%)	13 (4·1%)	35 (14·4%)
Days lost ..	413	104	980
Inoculated ..	80 (av. 1·3)	19 (av. 1·3)	263 (av. 7·7)
Non-inoculated ..	333 (av. 2·5)	85 (av. 2·25)	717 (av. 7·0)
Complications—			
Inoculated (16) ..	2 otitis 2 bronchitis	1 adenitis	1 otitis (abscess) 6 bronchitis 3 br.-pneum. 1 carditis
Non-inoculated (37)	5 Otitis (2 abscess) 9 bronchitis 2 br.-pneum.	2 otitis 2 bronchitis	5 otitis (5 abscess) 2 bronchitis 8 br.-pneum. 1 adenitis 1 pleurisy

Br.-pneum. = broncho-pneumonia.

experience with anticatarrhal vaccine at Haileybury College, as set out by him in the *British Medical Journal* of April 2nd, 1927, p. 642.) The theoretical objection is that the immune bodies produced as the result of an organism injected should be specific and to that organism only, and it is not possible to include a sufficient quantity of every coccus or bacillus which can produce the primary or secondary infection to which we are liable.

There may be some common antigen effect, and we are not able at present to fully appreciate the symbiotic effects of different organisms, one partner in which may be inhibited as the result of inoculations.

Personally, I am satisfied that vaccine treatment is of value in diminishing after-effects and reducing the period of disability. An injection should be given every three or four weeks from the middle of September to April, commencing with a small dose and increasing by 50 per cent. till the full dose is reached.

Conclusion

The preventive measures against respiratory infection may be summed up as consisting in measures adopted (1) to prevent the conveyance of infection from nose to nose, (2) to see that the natural defences of the respiratory passages are not injured, (3) to allow resistance to be developed against the infection, (4) to improve the general health and to keep it at a high degree of perfection.

There is one further point. If the lungs have been infected as by pneumonia, bronchitis, or pleurisy, it is most important to see that complete expansion of the lungs is acquired during convalescence to prevent (1) the development of conditions due to defective expansion of the lower lobes, such as bronchiectasis, interstitial pneumonia, or (2) over-expansion of the upper lobes at the expense of the lower, now included as emphysema. A habit or method of thoracic breathing induced by those lesions, by adhesions, and other forms of inhibition, favours limitation of the excursion of the diaphragm and lead to lack of expansion of the lower lobes, and over-expansion of the upper. It is most important to re-educate the diaphragm and restrict excessive thoracic expansion. This is not achieved by blow bottles but by inducing abdominal expansion, whereby the lower lobes are filled, retained secretions ejected, and adhesions stretched and rendered inoperative. I make a practice of insisting that, after conditions involving pleurisy or infection of the lower lobes, the patient shall, if necessary, be re-educated to develop full control of diaphragmatic movement. Convalescence is hastened and completed and the general health restored the sooner.

CHARLTON BRISCOE, M.D., F.R.C.P.,
Senior Physician to King's College Hospital.

DONATIONS AND BEQUESTS.—The late Dame Ada Sophia Woolfryes, of Evenly Vicarage, Brackley, Northants, left by will, among other bequests, £2000 to the Army Medical Officers' Benevolent Society, £500 to St. George's Hospital, £500 to the British Home and Hospital for Incurables, Streatham, £500 to the Royal Victoria Hospital, Netley, £500 to the British Medical Benevolent Fund; the residue of the property being divided between the Royal Army Medical College and the Royal Victoria Hospital, Netley.—Among other bequests the late Miss Jessie Henry, of Edinburgh, left by will £3000 to the Royal Infirmary, Edinburgh; £1000 to the Royal Edinburgh Hospital for Incurables; £250 each to the Royal Edinburgh Hospital for Sick Children and the Edinburgh Royal Institution for the Education of Deaf and Dumb Children, Henderson Row, Edinburgh; £200 to the Edinburgh Cripple and Invalid Children's Aid Society; and, subject to bequests to relatives and servants, the residue of the property to Edinburgh Royal Infirmary.—Sir John Cargill, who has already subscribed generously to Arbroath Infirmary, has given £3000 to that institution to provide a memorial to his grandfather, Dr. John Traill, one of the original promoters of the infirmary. The memorial will take the form of a "Dr. John Traill Ambulance Service."

PUBLIC HEALTH

VILLAGE SETTLEMENTS FOR TUBERCULOSIS

THE village settlement may now be said to have passed safely through the experimental period and to have become a recognised part of a national effort to control tuberculosis. At the end of the war a Departmental Committee recommended the spending of £1,000,000 as financial assistance to permanent settlements for ex-Service men. This recommendation never materialised, probably because it was felt to be inequitable to allocate so large a sum of money to so small a number of sufferers from tuberculosis, and the village settlements were left to work out their own salvation. Thanks to the enterprise and initiative of their leaders and to the support of the public they have achieved success though there have been anxious moments for all concerned. The report of the medical director of the British Legion Village at Preston Hall, near Maidstone, for the year ending Sept. 30th, 1933, recounts these difficulties and the way in which they were ultimately overcome. Shortly after the war a special committee set up to administer certain funds accruing from the Golden Ballot acquired the hall with buildings and grounds for the purpose of a settlement for tuberculous ex-Service men under the title of Industrial Settlements Inc. They had every possible advantage to their hand: capital, an excellent site, a certainty of filling their beds, a trained staff, and, at that time, a prosperous community with a high purchasing power as their supporters. Yet the scheme was not a success. Failure to realise adequately all the medical aspects of the situation, an unfortunate choice of industries for settlers, and difficulties of personnel may be cited amongst the reasons for the failure, and in 1925 Industrial Settlements Inc., after an independent valuation of the property, handed over the estate to the British Legion. Sir Pendrill Varrier-Jones was asked to inaugurate the next régime, and for 21 months a process of reconstruction under his guidance put the settlement again on its feet. In 1927 the present medical director, Dr. J. B. McDougall, took charge.

CATEGORIES AT PRESTON HALL

Dr. McDougall has kept clearly in mind the importance of the medical aspect of a settlement. In a survey of the settlers in residence at Preston Hall at the end of last September, he gives the following groups:—

1. (*a*) Those who have been in residence for less than five years and who have *not* been subject to relapse since admission; (*b*) those who have been in residence in the Settlement for less than five years and who have been subject to relapse since admission.

2. Those who have been in residence for five years or more but who have definite radiological evidence of pulmonary tuberculosis and who have been subject to relapse during the past five years.

3. Those who have been in residence for five years or more and who have had radiological or other evidence of pulmonary tuberculosis but who have *not* been subject to relapse during the past five years at least.

In all cases in the last group there are now no radiological signs of pulmonary tubercle; such tuberculosis as exists is limited to small, isolated, calcified nodules at the roots of the lungs or in the lung substance.

Group (1) comes within the five-year period which, in Dr. McDougall's opinion, should be regarded as the minimum period during which the sheltered conditions of settlement life should be offered to men admitted to a village settlement. Group (2) consists of a type for which he considers the village settlement is fulfilling a useful function by continuing to offer shelter for cases still presenting medical problems to a greater or lesser extent. They are unstable and their continued residence in the settlement is justified on this account. Both these groups demonstrate the value of the settlement for ex-patients in whom the chest lesion is relatively advanced. Ten typical cases are quoted.

The sputum has been positive in all cases and is still positive in seven. During the five-year period prior to their admission to the settlement these men had in all at least 198 months of sanatorium treatment—i.e., an average of 120 days per annum. Since being admitted to the settlement they have earned collectively £3926, or on an average £106 8*s*. 6*d*. per annum. The average number of days absent from duty per annum from causes including tuberculosis is 44·8. Only two men are doing work in which they had training prior to coming to the settlement. The cost of treatment on the basis of 45*s*. per patient per week to local authorities for this group during the five years prior to their admission to the Settlement at Preston Hall is altogether £1935. During the period under review, however, these men have cost local authorities in sanatorium treatment only £144.

PROBLEM OF THE "STAGNANT POOL"

It is with Group (3) that Dr. McDougall considers the greatest difficulties of village settlement administration lie. There is nothing more certain, he says, than that a large number in this group will ultimately die of diseases other than tuberculosis, and he believes that so long as the village settlement scheme does not make the necessary provision for the substitution of such cases in the village settlement, it can only contribute very slightly to the major problem of the treatment of tuberculosis. From the medical standpoint the most disappointing type of settler is the man who has been in residence for five years or more and who has completely arrested disease and yet who is not a key man in any of the industrial departments. Such a man is given all the medical advantages of a case subject to relapse, he occupies a valuable place in the settlement and is given security of tenure in the workshops, and, moreover, he is sometimes a pensioner for tuberculosis. At the same time the original tuberculous lesion in the chest is apparently completely arrested, and the problem of the future of this type of man constitutes the greatest difficulty in the successful administration of a village settlement.

A detailed analysis of 56 cases in this third group shows that no less than 21 of them never had tubercle bacilli in the sputum, hæmoptysis, or pleurisy with effusion, the diagnosis having been made on history and physical signs. Only in 20 of these cases had tubercle bacilli at some time been reported as present in the sputum, but in all of these the sputum has been negative for the past five years. Taking this group as a whole the X ray evidence also is negligible. Of the 56 men in the group a number are of course key men who have taken special care to equip themselves for special work, but it is not a function of village settlements to provide work from the outside world for the arrested cases, nor are such cases as come under Group (3) more likely to be victimised by outside employers than the patient discharged from the sanatorium who has never had the opportunity of living under settlement conditions. Dr. McDougall strongly emphasises the point that no new cases can be taken into village settlements so long as places are being occupied by a group of men for whom there are no longer medical grounds for continued residence.

EMPLOYMENTS

On the question of occupational therapy, Dr. McDougall is strongly of the opinion that the work done should have a market value, and the account of the industries at Preston Hall is a fine example of initiative, ability, and coöperation on the part of all concerned. The portable buildings department of the industries is now manned to deal with a turnover of £16,000 per annum, and in September last there were 48 settlers employed in this department, all ex-patients, and no man is receiving less than 1*s.* per hour for his work. The printing department shows an increase of orders executed expressed in pounds rising from £2305 in 1926–27 to £9647 in 1932–33, and the present report printed by the industries is a fine example of the high standard reached. Fibre and leather travelling goods, the marble graining of asbestos sheeting (a new process devised by the settlement), the indelible marking of soap tablets (again by a new process devised in the settlement) are other instances of sound enterprise.

Just as the village and sanatorium have grown, so the village stores has been enlarged to meet increasing demands placed upon it. The stores now sells all the housewives' requirements and runs a café. No sputum-positive cases are allowed on the staff, and dependants of the settlers are employed where and when possible. The sales have increased from £3525 in 1925–26 to £17,060 in 1932–33.

A table is given summarising the total sales from Preston Hall industries for each financial year. This shows that £449,704 worth of goods have been marketed by the settlers and patients, working in close coöperation over a period of eight and a half years. During the same period a total sum of £146,853 has been paid in wages to settlers.

THE RISK OF CROSS-INFECTION

The dependants of the settlers occupy an important place in the report. An analysis of the adult male settlers in the village shows that 17·8 per cent. of them have tubercle bacilli in their sputum at present, and that many more have in the past been infectious. Moreover, there are 250 patients in residence in the sanatorium. In other words, massive and certainly repeated infection as distinct from diluted infection may be expected to be more common in the settlement than in a community comprising the same number of individuals in the outside world. In spite of this the Preston Hall record is extremely good. Among the 89 children born in the settlement since the British Legion took over there have been three deaths. None of them had symptoms or signs of tuberculosis of lungs or meninges, and only one had indications of abdominal tuberculosis, a record which compares very favourably with the fate of children born into tuberculous households elsewhere.

Dr. Noel Bardswell has asked the question about such village settlements: "What are the particular things which these places show?" and has replied "In the first place they have splendid housing; there is regular work. . . There is no poverty. . . There is no anxiety. . . There is guaranteed employment and security, facilities for ordinary enjoyment, and regulated hours."

Medicine in the New L.C.C.

LAST WEEK [1] we enumerated the medical men and women elected to the new London County Council, and we were then able to give the names of those nominated to be chairmen of committees. These committees have been largely reconstituted in the recess. The central public health, housing, local government, and other committees have been superseded in favour of a regrouping of subjects, and the standing committees of the Council are now as follows:—

Building Acts	Housing and Public Health
Education	Mental Hospitals
Entertainments	Parks
Establishment	Parliamentary
Finance	Public Assistance
Fire Brigade and Main Drainage	Public Control
General Purposes	Supplies
Highways	Town Planning
Hospitals and Medical Services	Welfare of the Blind

On 12 of these 18 committees medical members have been nominated to serve as follows:—

Entertainments.—Dr. J. A. Gillison and Dr. S. W. Jeger.

Establishment.—Dr. S. McClements and Miss E. Rickards.

Fire Brigade and Main Drainage.—Dr. C. W. Brook.

General Purposes.—Dr. F. Barrie Lambert.

Hospitals and Medical Services.—Dr. Brook, Dr. S. Monckton Copeman, Mr. Somerville Hastings (chairman), Dr. Jeger, Dr. Barrie Lambert, Miss Rickards, Dr. Henry Robinson.

Housing and Public Health.—Dr. Gillison.

Mental Hospitals.—Dr. Copeman and Dr. Robinson. Dr. Adeline Roberts, not being a member of the Council, will also serve on this committee.

Parks.—Dr. McClements.

Public Assistance.—Mr. Somerville Hastings and Dr. Barrie Lambert.

Public Control.—Dr. Bernard Homa.

Town Planning.—Dr. Gillison.

Welfare of the Blind.—Dr. Brook.

Medical Care of Children over Fourteen

For many years thoughtful people have been pointing out that between the ages of 14, when children leave school, and 16, when they come under the National Insurance Act, there is an interval during which they are without organised medical care and supervision. One possible bridge, suggested by Dr. V. T. Thierens (Blackburn), is the rheumatism supervisory centre. In a few special cases this care exists, for example, the fortunate children who go on to secondary schools, or those retained in special schools till 16. Their example is mainly of interest in showing how much medical care after 14 is necessary. Some others will be dealt with by the certifying surgeons under the Factory Acts. But all these together form only a tithe of the adolescents. A larger number would be dealt with if other local authorities were to follow the example of the L.C.C. and offer medical inspection and treatment to the children attending day continuation classes or evening institutes.[1] In the London trial scheme treatment is to be provided for those unable to obtain it on their own initiative, at the school treatment centres, the small charges made being remitted to those unable to pay. An excellent point in the plan is the stipulation that the lecturer on health subjects at the evening institutes shall, when possible, be the

[1] We then noted that Dr. Stella Churchill had represented South-east Southwark in 1931. She had as a matter of fact represented that division for seven years, from 1925 to 1932, when she resigned on account of ill-health.

[1] See THE LANCET, Feb. 10th, p. 321.

inspecting school medical officer. The total number of students examined under this experiment would be rather less than 4000, since this year only three evening institutes are to be included; but if the experiment proves successful it might be extended to all the evening institutes which have between them some 30,000 students. Thus, with the 4000 in the day continuation schools, if 75 per cent. of the scholars agreed, the total number of examinees would be nearly 25,000 in London alone. Even so, and if all the other education authorities followed the example of London, still only part of the 14–16 year-old group would be brought in; for every year some 300,000 children leave the elementary schools to seek employment, and thus lose all medical care. And yet under the Education Act of 1921 any authority may exercise like powers over children and young persons attending any school or educational institution, whether aided by them or not, if so requested by the managers thereof. Under this clause it would seem to be legally possible to obtain facilities for the medical care of those attending the juvenile instruction centres, even though financial aid might have to be given to the authorities concerned. In a letter to the *Times* of March 6th, Mr. H. W. Jevons says that "recent visits to five juvenile instruction centres in a north-eastern depressed area undoubtedly show the need for medical investigation . . . the teachers at each centre agreed that inspection was needed." It is unfortunately a fact that these particular young persons of 14 to 16 are just those who would scarcely ever secure medical attention on their own initiative or that of their parents.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 10TH, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 5 (last week 11); scarlet fever, 3210; diphtheria, 1224; enteric fever, 21; acute pneumonia (primary or influenzal), 1723; puerperal fever, 69; puerperal pyrexia, 132; cerebro-spinal fever, 22; acute poliomyelitis, 4; acute polio-encephalitis, 4; encephalitis lethargica, 5; dysentery, 12; ophthalmia neonatorum, 101. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 19th–20th was as follows: Small-pox, 15 under treatment, 5 under observation (last week 17 altogether); scarlet fever, 1706; diphtheria, 1872; enteric fever, 8; measles, 3297 (last week 3040); whooping-cough, 334; puerperal fever, 27 mothers (plus 8 babies); encephalitis lethargica, 261; poliomyelitis, 5; "other diseases," 112. At St. Margaret's Hospital there were 20 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 141 (55) from measles, 12 (4) from scarlet fever, 42 (7) from whooping-cough, 37 (9) from diphtheria, 47 (14) from diarrhœa and enteritis under two years, and 99 (23) from influenza. The figures in parentheses are those for London itself.

Birmingham and Dudley reported deaths from enteric fever. The fatal cases of influenza included 5 in Stoke-on-Trent, 4 each in Liverpool and Birmingham. There were 12 fatal cases of measles in Liverpool, 11 in Middlesbrough, 8 each in Leeds and Manchester, 4 each in Willesden and Newcastle-on-Tyne, 3 in Bristol. Whooping-cough caused 7 deaths at Liverpool. Six deaths from diphtheria were reported from Leeds, 4 from Liverpool, 3 from Merthyr Tydfil.

The number of stillbirths notified during the week was 295 (corresponding to a rate of 43 per 1000 total births), including 45 in London.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Dekrysil Treatment: the Paddington Inquest

AT the Paddington coroner's court last Saturday the adjourned inquest on Miss Vivian Philcox, a young dancer who had sought to reduce her weight by treatment which included dekrysil tablets, ended in a verdict of death by misadventure. Death was found due to nitrophenol poisoning. Dr. Roche Lynch, giving evidence of examination of certain organs, said he found traces of nitrophenol in the intestines and stomach. All drugs of the nitrophenol type, he added, were known as liver poisons; it was a question of degree as to how much was taken. There was significant fresh evidence last Saturday of the purchase by Miss Philcox of a second bottle of 25 of the capsules on Feb. 20th in addition to the first bottle of 25 purchased on Feb. 1st under medical advice. It appeared that she took 7 tablets under medical supervision and, if a bottle found afterwards to contain 8 tablets was the second bottle she bought, she had possibly taken 17 tablets between Feb. 20th and her death on Feb. 22nd.

The result of the inquest was to exculpate all concerned except the unfortunate patient herself, who had evidently disregarded professional advice in her anxiety to reduce her weight so as to retain her professional work. The chemist from whom she bought the tablets had cautioned her to take them only under doctor's orders. The manufacturers' label on the bottle was a clear warning, "to be administered only on medical prescription." In addition each package contained a warning leaflet as to the use of the capsules, the suggested dosage being one capsule daily. The leaflet stated that the effects should be carefully studied, and the appearance of nausea or intolerance to the drug must lead to special investigation; with regard to toxic symptoms, if the metabolic rate was increased to over 50 per cent., it was a signal for the immediate withdrawal of the treatment. No blame, observed Mr. Idris Evans, the deputy coroner, could attach to the medical practitioner, who had given Miss Philcox careful directions, and could not be held responsible if those directions were disobeyed.

There remains the question of the future control of the drug. The manufacturers had suggested to the authorities that it be placed on the Poisons List so as to secure that it could not be bought except on medical prescription. A formal official reply had been received to the effect that the matter was having consideration. The deputy coroner remarked that he was aware that departments move slowly. It is, however, only fair to remember that the whole question of setting up the new Poisons List is now receiving fresh attention by a new body as the result of the Pharmacy and Poisons Act of last year. This particular drug could have been added to the poisons schedule under the law which is about to disappear; but it would have been natural enough to refer the question as part of the general survey which highly competent authorities are now conducting. The deputy coroner trusted that the Poisons Board would take some early action; meanwhile, he observed, the publicity of the inquest should deter other members of the public who might be tempted to expedite treatment in defiance of medical advice.

BUCHAREST

(FROM OUR OWN CORRESPONDENT)

CHRONIC BRASS POISONING

Dr. Bernhard Pfeiffer, of Transylvania, reports a case of what he believes to be true brass-worker's ague. The diagnosis of such cases is not easy, for of all the toxic metals brass gives rise to the most confusing symptoms, and the variation in recorded opinions about it suggests that the poisoning takes no regular form. In Pfeiffer's case the general symptoms were those of chronic metal-poisoning, save that the patient suffered from chills which resembled malarial ague but did not follow the usual periodicity of that complaint. The green line round the gums which serves to distinguish this condition from other metal-poisonings is not always present, especially where the teeth have been well cared for. The organic affections of the nervous system, so common in other forms of metallic poisoning, are absent. The attacks are probably due to excessive ingestion of brass, and more particularly to the copper in the alloy.

THE CAMPAIGN FOR PURE MILK

The licences of the dealers who supply Bucharest with milk have to be renewed in January, and this year the superintendent of milk inspection has taken the opportunity to enforce the existing laws governing the sale of milk. In former years it has been the practice to issue the licences first and inspect the premises of the dealers afterwards. But this procedure has now been reversed, and before the end of last December the 250 dairies which supply the town with milk had all been inspected, and dealers whose premises did not come up to the statutory sanitary requirements were refused licences. This applied not only to dairies but to all places where milk is kept for sale or for the purpose of sale to agents. The sterilisation of milk bottles is also to be insisted upon, and it is hoped that a strict inspection of all sources of supply, together with the use of pasteurising plants, should ensure a supply of high-grade milk for consumers next summer.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE "CUTS" BILL

LAST week in the Dáil the Minister for Local Government and Public Health, who is in charge of the Local Services (Temporary Economies) Bill, accepted an important modification of the measure. As introduced the Bill laid down certain scales of "cuts" which were to be the minimum deductions and were to be compulsory as such, each local authority, however, having the power of making larger deductions as it should think fit, subject to the approval of the Minister. Several amendments were on the paper intended to make the deductions set out in the Bill maximum instead of minimum. The Minister expressed his willingness to regard the prescribed deductions as standards and to be applied in all cases. This concession removes one of the most objectionable provisions in the Bill—the leaving to the local authorities to deal with each individual case separately. The Minister refused to accept an amendment which proposed to make the measure optional for each local authority in its own area, and the amendment was defeated on a division.

PANEL AND CONTRACT PRACTICE

Favourite Prescriptions

A BOOKLET has been issued by the Paddington Medical Society (obtainable, price 1s., from the secretary, 81, Elgin-avenue, London, W.9), giving in pence the price and dispensing fee for the quantity, usually ordered on one occasion, of every item of the National Formulary. In it a prescriber can readily discover the total cost of his favourite 8-oz. mixture, of his usual two-dozen pills, or of 1 oz. of his routine ointment. Every practitioner has his own ideas of what medicines are suitable for what maladies, dependent no doubt both on his own experience and on what he was taught at his medical school. It would be interesting to know what are the commonest prescriptions in London. This varies with the time of year, but the pricing bureau says quite definitely that Mist. Ammon. Chlor. Co. is the commonest of all: 8 oz. of this cost 1·1*d*. with dispensing fee of 5*d*. The next most common medicine is Mist. Sod. Salicyl., costing 1·8*d*. for 8 oz. with dispensing fee 5*d*. Other common prescriptions are Mist. Expect., Mist. Tuss., together with the gentian mixtures for tonics. Apparently Mist. Alba is out of fashion and hardly ever ordered. There has not been so much study of prescription frequency in this country as in America, but Martindale, in 1894, made an analysis of 12,000 prescriptions from Aberdeen, Bournemouth, Carlisle, Cork, Oxford, and London, and Cockburn analysed 1000 prescriptions for London in 1913. The 19-year interval showed little change in frequency except for a falling off in the use of quinine.

Official Checking

These figures refer to private prescriptions. Mr. A. B. Gilmour, superintendent of the Glasgow pricing bureau, threw some light on national health prescribing in Scotland in a paper he read at Edinburgh on Feb. 16th (Pharmaceut. Jour., Feb. 24th). According to the British Pharmacopœia three persons are party to the transaction—viz., patient, prescriber, dispenser. The Insurance Act introduced a fourth party—viz., the State—in view of its financial interest, and brought about an entirely new aspect of prescribing and dispensing. The central checking bureau in Glasgow was the first office of its kind in Britain, and is still the only one in Scotland. It is run by 14 persons: 10 representing insured persons, 2 representing doctors, and 2 representing chemists. A staff of 50 persons scrutinises and prices every insurance prescription for Scotland and Northern Ireland, also those of public health and public assistance authorities. Last year it dealt with 3,700,000 prescriptions, and since it started it has handled 45,000,000 prescriptions which have cost two and a half million pounds. Sixty to eighty thousand prescriptions are dealt with each week; some of these were illegible from the start, others are crushed, others have pencil marks rubbed off—the task often appears impossible. The following mistakes recur: Lin. Methyl. Sap. for Lin. Methyl. Sal., Lin. Sinapis for Lin. Saponis, Lysol for Lugol's solution. There is the daily difficulty of deciding whether Atophan or Alophen is intended, Calomel or Calamine, Sod. Br. or Sod. Bic., Syr. Aurant. or Syr. Aromat. Mr. Gilmour thinks that

illegible writing should be made a punishable offence under the Act, as in Norway. Insured persons are entitled to proper and sufficient medicines and prescribed appliances.

Difficult Prescribers

Examples of improper prescriptions are given as follows: 2 lb. of oatmeal, 2 lb. treacle, 3 lb. crude carbonate of sodium, one prescription for 56 lb. Epsom salts—this was to save the society additional benefit in the form of spa treatment. Another was for 8 oz. Syr. Aurant. to be used as directed—the doctor stated he wished the patient to have nicely flavoured drinks. A public assistance prescription was for one tin of Rodine Rat poison. Some examples are given of prescribing in extravagant quantity:

Ten doz. grs. 2 tablets of sod. phenobarbitone. Direction: one at night—a supply for 120 days.

Six oz. Tinct. Iod. 5 drops thrice daily; increase the dose by one drop after a week—a supply for 160 days.

One gallon of liquid paraffin. Direction: one tablespoonful night and morning. Supply for 160 days.

The following prescriptions are quoted to illustrate extravagance in character:

One and a half drachms Liq. Strychn. with Syr. Aurant. 8 oz. Direction: one dessertspoonful three times a day—in this case it cost 2·8*d.* to flavour and sweeten one pennyworth of a solution of strychnine.

One doz. each of Aspirin tablets, Phenacetin tablets, and Quin. sulph. tablets. Direction: one of each kind as directed.—As there are three different lots of tablets 3 × 7½*d.* dispensing fees are allowed. If one dozen aspirin, phenacetin, and quinine powders had been ordered the dispensing fee would have been 5*d.*

Cantharadine plaster four pieces 2-in. square, ten pieces 1-in. square.—As there were 14 separate pieces of plaster 14 × 5*d.* dispensing fees had to be allowed. If the plaster had been prescribed in one piece the dispensing fee would have been 5*d.* instead of 5*s.* 10*d.*

PLACEBOS

Various other interesting questions arise. For instance, should placebo prescriptions be a charge against the drug fund?—e.g., four doz. pills of bread-crumbs: one three times a day after food. Another was half ounce distilled water. Directions: the eye drops, two drops three times a day with great care. The last three words suggested that possibly atropine had been omitted, but inquiry showed that the patient complained of some eye trouble thought not to exist by the doctor. Whatever it was it was cured after the first lot of drops, so it was decided that ½*d.* for the distilled water and 5*d.* for dispensing was well spent.

LACK OF SPECIFICATION

Another trouble is lack of specification—e.g., cotton-wool a small packet. The weight should always be stated. Some prescribers do not appreciate the difference between two square yards of gutta-percha tissue and two yards square. A pint or quart should be an imperial pint or quart, but frequently a reputed pint or quart is dispensed. Thyroid still gives rise to difficulty. The B.P. 1932 tried to clear the position by making Thyroideum Siccum, Dry Thyroid, Thyroid Extract, and Thyroid gland all synonyms for Thyroideum. But doctors still continue to write prescriptions for fresh gland, fresh gland 1914, fresh dry gland, old strengths, old standard, and old formula. Insulin gives rise to confusion through the doctor ordering the quantity in c.cm. instead of remembering that 20 units per c.cm. strength is put up in multiples of 100 units, and that 40 units per c.cm. strength is put up in multiples of 200 units. The prescriber need only state the number of units required, and whether they are to be 20 or 40 units per c.cm. To write 600 units double strength means a total quantity of 600 units of 40 units per c.cm. strength; yet sometimes it is dispensed as if it were 1200 units of 20 c.cm. strength.

Some Generalisations

An investigation of 140,000 actual prescriptions showed that they fell into the following classes:—

	Per cent.		Per cent.
Mixtures	56·8	Pills	2·37
Weighed powders	10·8	Paints	1·66
Ointments & pastes	7·2	Tablets	1·37
Lotions	4·8	Gargles	0·82
Liniments	3·69		

These figures are said to confirm the result of an investigation of 217,000 prescriptions three years previously. It was also found that in the Edinburgh area the number of prescriptions for tablets is three times greater than the average for Scotland. A scrutiny of nearly 40,000 prescriptions revealed the fact that the following drugs were most frequently prescribed in the order given:—

1. Sod. Bicarb.
2. Tinct. Nucis. Vom.
3. Ammon. Carb.
4. Vin. Ipecac.
5. Spir. Chloroform.
6. Glycerin
7. Infus. Gent. Co.
8. Aqua Chloroform.
9. Sod. Salicyl.
10. Tinct. Camph. Co.
11. Pot. Iod.
12. Infus. Seneg.
13. Spir. Ammon Aromat.
14. Magn. Sulph.
15. Liq. Arsenicalis.
16. Liq. Strychn.
17. Syrup. Tolut.
18. Bism. Carb.
19. Aqua Menth. Pip.
20. Liq. Ammon. Acet.

An investigation of 118,000 prescriptions showed there was:—

One ingredient in		22·03	per cent.
Two ingredients	„	16·66	„
Three	„ „	20·88	„
Four	„ „	23·14	„
Five	„ „	13·01	„
Six	„ „	3·59	„
Seven	„ „	0·60	„
Eight	„ „	0·08	„
Nine	„ „	0·01	„

Dispensing Fees

In an investigation of 215,000 prescriptions it was found that dispensing fees ranged from 2½*d.* to 3*s.* 9*d.*: 89 per cent. were 5*d.* fees, 4·3 per cent. were less than 5*d.*, and 6·7 per cent. were more. That expense by itself is no bar to sufficient medicine being ordered is shown by the case of one insured person who in a period of eight and a half years received 7¼ cwt. of an ointment composed of boric acid and soft paraffin, at a cost of £112 16*s.* 1*d.* Another insured person in a period of three and a half years received insulin to the value of £112, liver extract to the value of £120, mixtures, tablets, and pills to the value of £3, making a total for one person of £235. This patient had 134,700 units of insulin and 936 tubes of liver extract representing 4 cwt. 20 lb. of fresh liver, for which 38 bullocks would be required.

EXTENSION OF GRANTHAM HOSPITAL.—A contributory scheme is to be established in the area of this hospital, which is about to be enlarged by the erection of new men's, women's, maternity, children's, and private wards which will increase the accommodation from 28 to 75 beds at a cost of £25,000. These extensions have been made possible by an arrangement with the Kesteven county council, which is to receive an allocation of 24 beds as an alternative to providing a hospital of its own.

CORRESPONDENCE

THE BARBITURATES

To the Editor of THE LANCET

SIR,—May I be permitted to make a few concluding remarks relative to this discussion to which you have opened your columns for so many weeks. It is to be feared that the perspective of the discussion has been somewhat lost. My contribution on the uses and dangers of hypnotic drugs other than the alkaloids read before the Royal Society of Medicine on Dec. 12th, 1933, appears to have been the origin of the correspondence on the subject. My remarks were not intended to apply to the use of luminal for epilepsy for example. It is clear, as I have stated more than once in my papers, that the barbiturates have their place in therapeutics as useful and valuable hypnotics.

There has been strong evidence on the positive side throughout the correspondence:—

1. That the margin between the full therapeutic dose and the toxic or coma-producing dose is not a great one, and accidental or careless overdosage on the part of the patient may be dangerous or even fatal.

2. Great overdosage, whether from suicide or confusional accident has been a frequent occurrence in my experience, which is perhaps exceptional, since cases of this kind are often referred to me in emergencies. These cases are of a tragic nature and lead to very great mental suffering on the part of relations and friends of the patient.

3. At the present time it is obvious that the restriction now in force—viz., the position of the barbiturates in Part I. of the Poisons Schedule—is valueless as a safeguard to the public, since the possession of a medical prescription retained by the patient enables unlimited quantities of these drugs to be obtained by frequent repetition of the prescription without medical advice. This is the usual mode of acquisition of the drug in poisoning cases.

4. The frequent tragedies appearing in the press and also those coming to the notice of physicians called in to treat cases of severe poisoning, have aroused public opinion on the subject and caused serious alarm in many quarters. It is obvious that the public needs and desires protection from powerful drugs such as the barbiturates, dinitro cresol, &c. This can only be effected by medical control—viz., the restriction of the use of these drugs to medical prescription which should only be repeated as indicated by the signature of the duly qualified medical prescriber. (I was interested to see that Dr. Arthur P. Luff in his critical letter also made this recommendation.)

It is necessary for, and I think the duty of, the medical profession to shoulder this responsibility of safeguarding the public from risks of poisoning by drugs, the potency of which the ordinary lay person has no conception. One not uncommonly meets with persons who are accustomed to take say anything from 2 to 10 tablets of aspirin. If this be done with barbitone, dekrysil, atophan, or many other drugs which might be quoted, disaster is sure to follow.

5. The danger of toxic symptoms (such as paralyses of various kinds which have been enumerated) from too long repeated daily use of the barbiturate group of drugs has been frequently observed by many physicians and is an accepted fact. This can be safeguarded against by medical supervision. I have seen a considerable number of these cases and they are by no means so rare as has been suggested. It is important that the medical profession as a whole should realise the possibility of toxic effects from long continued therapeutic use so as to recognise any such symptoms at the earliest opportunity.

6. The danger of addiction cannot be ignored. It is true that addicts to the barbiturates have often been addicted to other drugs, but this is a characteristic of morphine and other forms of addiction. I have elsewhere fully stated that in intensity and severity barbitone addiction does not by any means equal morphine addiction; nevertheless it is a real and serious danger to be borne in mind, vide the evidence of the mother of H. E. T., 1912, a young man who had taken veronal for six years and died from poisoning by it. "He took it for pneumonia and could never give it up." "He told me he should never be able to give it up." "He seemed to lose all control when he wanted it" (Roy. Soc. Med. Proc., 1927, vol. xv.). This was an extreme case, but I have met with marked addiction on many occasions.

7. In the use of barbiturates for anæsthesia great care is required to be sure that there are no special contra-indications such as were pointed out in my paper (Brit. Med. Jour., March 10th, 1934).

8. The use of cisternal puncture in the treatment of poisoning by barbiturates is criticised by Dr. Clifford Allen in his letter in your last issue. I should like to point out that this form of treatment is reserved for the very severe cases, especially those with definite and extending pneumonia. Sir James Purves-Stewart was, I think, the first to use this treatment in barbiturate poisoning. It has been employed by him on several cases which we have treated jointly. From a great experience of these cases I can assert that in the very severe cases cisternal puncture is more immediate in its beneficial effects than lumbar puncture, and has, I believe, been the result of the saving of several lives in cases where lumbar puncture had already been tried. On an ordinary case without pneumonia lumbar puncture frequently repeated would be all that was necessary, when combined with the other general methods of treatment already fully described.

It is perfectly obvious that the operation of cisternal puncture should only be performed by one completely familiar with the technique. It is a simple operation performed even more easily than lumbar puncture, and in the hands of an experienced operator is without danger. I might perhaps add that I do not perform the operation myself, but prefer someone to do it who is completely familiar with the technique and is frequently doing it.

I am, Sir, yours faithfully,

Welbeck-street, W., March 19th. W. H. WILLCOX.

UNDULANT FEVER

To the Editor of THE LANCET

SIR,—I have read with great interest Mr. A. H. Quin's letter in your issue of March 10th (p. 543), in which he refers in generous terms to my address on undulant fever to the Medical Officers of Schools Association (which appeared in your issue of Jan. 13th) but comments on my silence in regard to the rôle of porcine strains in causing human infections

The Association which I was addressing had asked me to deal particularly with the relationship of undulant fever to cow's milk; hence, as my time was strictly limited, I omitted all reference to many

important aspects of the disease including porcine infections. I am, however, well acquainted with the admirable work on *Brucella abortus suis* carried out by Hardy and others in Iowa and with the descriptions of similar discoveries in Denmark, Germany, Russia, &c., and I have long been anxious to ascertain whether swine in Great Britain are ever infected with this organism. So far the only evidence of such infection which I have been able to elicit was a case in the Isle of Wight in which the patient did not drink raw milk and three of the cows on her small farm gave negative agglutination tests for brucella, but one of her seven swine gave a positive test. Since the occurrence of this case in 1930, however, investigations by several experienced workers (who are continuing their researches) have failed to show any evidence of swine infection—which is very surprising considering the frequency with which skim milk is used for feeding swine and the considerable proportion of cow's milk which is known to contain *Br. abortus*. Similar negative findings have, however, also been reported from New Zealand by Maclean, though contagious abortion is common amongst the cattle there and a number of human infections have occurred among farm workers.

Mr. Quin's hope that "the medical profession in England will give their veterinary colleagues full support in all campaigns aimed at eradication of the disease in animals" will be echoed by all in this country who are interested in the subject. We have, in my opinion, been blind too long to the important advantages which must attend upon the close coöperation of the medical and veterinary professions for the elucidation of this and many other problems, but there are now signs that the former isolation of the two sister professions is yielding to the attraction of common interests and the stern dictates of necessity.

I am, Sir, yours faithfully,

W. DALRYMPLE-CHAMPNEYS.

Ministry of Health, Whitehall, S.W., March 13th.

THE DANGERS OF SLIMMING

To the Editor of THE LANCET

SIR,—The publicity given by the press to the case of a healthy young woman who died recently from the ill-effects of taking a medicine designed to produce loss of weight by metabolic acceleration focuses attention once again on the "dangers of slimming." There are three factors which are mainly responsible for those dangers: (*a*) irrational diets, (*b*) unsuitable cases, (*c*) the misuse of drugs.

(*a*) The cause of obesity is an excessive calorie intake over a long period of time. Weight can therefore be reduced safely and comfortably only by reversing the process—that is, by cutting the calories, but it must be done in a scientific manner. Irrational diets are the commonest cause of ill-health. Into this category come semi-starvation diets, unbalanced meals, unpalatable foods. Since fat is accumulated very slowly, its removal must not be hurried. By dieting correctly, many stones of fat can be removed with comfort and safety to the reducer.

(*b*) The second factor is the adoption of slimming diets by unsuitable cases; for instance, those who are already thin enough, diseased people, the mentally unstable. Abnormal leanness is just as much a disordered state of nutrition, with its attendant liabilities, as obesity.

(*c*) In the great majority of cases drugs are unnecessary. The obese patient, unless he is subthyroidic, which is seldom, has a normal basal metabolic rate. To accelerate that rate and keep it raised over a long period of time, whether by the administration of thyroid extract, dinitro-phenol, or other artificial means, is unphysiological. A cold bath will increase the B.M.R., but no one would prescribe three cold baths a day as a means of losing weight.

Much less would be heard of the ill-effects of slimming if these three factors were eliminated.

I am, Sir, yours faithfully,

Lancaster Gate-terrace, March 19th. W. F. CHRISTIE.

A DAYLIGHT GAUGE

To the Editor of THE LANCET

SIR,—In the description of the Waldram Daylight Factor Gauge on p. 556 of your issue of March 10th it is suggested that it may be necessary to resort to laborious photographic methods in order to assess the "daylight factor" at working positions from which no sky is visible. May I point out that international agreement was reached in 1931 to the effect that at all such positions the light is definitely inadequate for ordinary purposes such as clerical work over reasonably long periods, except under very exceptional and temporary conditions of large areas of very white facings on external obstructions, themselves open to large areas of sky, for the short periods over which such facings remain clean in the air of towns. At such positions there is, strictly speaking, no direct "daylight factor" at all. Considerable information on the subject will be found in Technical Paper No. 7, Illumination Research, D.S.I.R. (Penetration of Light and Sunlight into Buildings), second edition, H.M. Stationery Office, 9*d*.

I am, Sir, yours faithfully,

PERCY J. WALDRAM.

Gray's Inn-square, W.C., March 15th.

A CONFLICT OF POLICY

To the Editor of THE LANCET

SIR,—Your correspondent "M.O.H." sounds a warning of the irritation felt and not infrequently voiced by local authorities at the attitude of the British Medical Association in certain questions of public health policy and administration. The particular instance which "M.O.H." cites of the Association's adherence to a policy of urging local authorities to employ general practitioners as part-time public health officers is just one of those disturbing features tending to suggest a closed eye on the weal of the practitioner with only a faint distant vision of the health of the public. The M.O.H. is often faced with a difficulty in administration and may follow the published tenets of the B.M.A. in advising his committee more from loyalty to the Association than because he thinks this course is the best for the work of his department. Manifestly this is a regrettable state of affairs.

It is one which could be avoided without great difficulty. In its dealings with local authorities the B.M.A. has a well-defined and invaluable sphere of political activity in the protection of the interests of medical men in connexion with salaries and conditions of service. The M.O.H. must take his own counsel or look for guidance in affairs of administration to the central authority—the Ministry of Health.

I am, Sir, yours faithfully,

March 20th. DEPUTY M.O.H.

*** But the employment of practitioners in part-time duties brings up questions exactly within the sphere of the protection of their interests. With these we deal in a leading article.—ED. L.

OBITUARY

SIDNEY REGINALD DYER, M.D. Brux., D.P.H.

LATE H.M. COMMISSIONER OF PRISONS

We regret to announce the death of the well-known Prison Commissioner for England and Wales, Dr. Reginald Dyer, which occurred on March 14th in London.

Born in 1861 in Chiswick, Sidney Reginald Dyer received his education at the Middlesex Hospital, taking classes also at St. Bartholomew's, and qualified in 1883 as M.R.C.S., L.S.A. He graduated later as M.D. Brux. with honours, and served as house physician at the Middlesex Hospital and was for a time resident medical officer at the Hunts County Hospital. In 1885 he joined the Prison Service and found his métier immediately, for he was at different times senior medical officer at Brixton, Dartmoor, and Wandsworth. At these important prisons many famous criminals came under his charge, and where evidence as to their mental condition was needed he proved himself a scrupulously fair and very competent witness. He was called to the Bar in the Middle Temple in 1896, and was appointed Medical Inspector of Prisons in 1917, and in 1920 Prison Commissioner for England and Wales. He was a member of the Council of the Central Association for Mental Welfare.

DR. DYER

[Photograph by Elliott & Fry.

During the war Dyer was Home Office referee to the German internment camps, where thorough knowledge of the subjects which he had made his own—namely, the administration of prisons and the psychological problems offered by prisoners—was of great utility. On his retirement from his official position he became a valuable member of his county bench as a J.P. for Somersetshire.

ARCHIBALD STODART-WALKER, O.B.E., M.B., F.R.C.P. Edin.

We regret to record the death of Dr. Archibald Stodart-Walker which occurred in London on March 13th in the 65th year of his age. He had retired from the medical profession, and for many years had given up scientific work for the pursuit of literature.

Born in 1869 the son of the late David Walker, of Saint Fort, Fife, he was educated in Liverpool and at the University of Edinburgh. He was a successful student and particularly well known for his interest in literature; he was president of the students' representative council and of the University dramatic society. He graduated as M.B., C.M. Edin. in 1891, in 1895 took the diploma of M.R.C.P. Edin., and two years later proceeded to the fellowship. His first appointment was that of physician to the New Town Dispensary in Edinburgh, but later he was assistant to the professor of physiology and clinical medicine in the University. During this period Stodart-Walker was an enthusiastic student of neurology, and did industrious post-graduate work, when opportunity offered, in London, Bologna, and Paris. He served throughout the war, obtained the O.B.E., and was mentioned in despatches. At the conclusion of hostilities he retired from practice and devoted himself to the literary studies which for many years had attracted his particular attention. He wrote voluminously, and from 1900 onwards produced a large output of instructive essays and popular verse. He was also an accomplished art critic.

WILLIAM NOLAN, L.R.C.S. & P. Irel.

Dr. William Nolan, who died in Bayswater, London, early in the month, was well known in the Paddington district where he acted as chairman of the Bench of Magistrates for many years. He was qualified in Dublin in 1883 and held appointments at the West London Hospital, Chelsea Hospital for Women, and the Belgrave Hospital for Children. He was for a time medical officer of the London City Mission and served as a temporary captain in the R.A.M.C. during the war. He was called to the Bar at the Middle Temple.

CHRISTOPHER THOMAS HELSHAM, L.R.C.P. Lond., M.R.C.S. Eng., D.S.C.

The death occurred recently at Beccles, Suffolk, of Dr. Christopher Helsham at the premature age of 40. The son of the late Dr. H. P. Helsham, of Beccles, who predeceased him by a year, he was educated at Chesterfield and Guy's Hospital. He was a probationer surgeon in the Navy at the latter end of the war, and gained the D.S.C. for fine work. At the conclusion of hostilities he came back to Guy's, qualified and served as house surgeon there and as casualty surgeon at the Norfolk and Norwich Hospital. He then returned to the Navy for a brief period, but in 1922 resigned his commission and went into partnership with his father, remaining a member of the firm until 1929 when his health broke down and he was forced into retirement. The community has lost in him a valuable member at the early age of 40.

WILLIAM CONNOLLY, M.D. St. And.

DEPUTY INSPECTOR-GENERAL, R.N.

The unusual veteran William Connolly has died at Kingstown, Dublin, at the age of 102. It is fair presumption that he was the oldest surviving officer of the senior service as well as the oldest qualified medical man, having reached that position two years before the Act of Registration.

William Connolly was born in April, 1831, but did not enter the medical profession so early as was usual in those days, for it was not until 25 years later that he qualified as L.R.C.S. Irel., a diploma which was at that time sufficient in itself for registration. He graduated six years later as M.D. St. Andrews, but had in the meantime joined the naval medical service. Internal disturbances in China shortly before this period had brought a new attitude among the nations of Europe towards the country, the actions of the Chinese towards foreign settlers making vigorous

intervention necessary. From 1840, for some 20 years, including the period of the Tai Ping rebellion, England was at war with China. Connolly served as a surgeon during 1857 and 1858 on the flagship *Calcutta*, saw much fighting and was decorated for his personal services. Later he was present at operations in New Zealand consequent on the Maori rising calling for naval intervention. Then, following a brief appointment at Chatham, he served again abroad in South Africa and the West Indies, returning to England in 1873 to take up an appointment on the *Britannia*, the training ship for cadets. At the expiration of this appointment he joined the Mediterranean Fleet, was promoted fleet-surgeon in 1878, and was present at certain naval operations connected with the Zulu war. His final appointment was on a depôt ship at Portsmouth, and he retired in 1886, after 30 years' service, with the rank of deputy inspector-general of hospitals and fleets. He was then 55 years of age, and consequently his period of retirement amounted to nearly half a century.

MALCOLM WINFRID SHUTTE, M.A. Camb., L.R.C.P. Lond., M.R.C.S. Eng.

THE death of Dr. Shutte, of Weybridge, will be much regretted in a district where he rightly enjoyed respect and popularity. Born in 1874 he was educated at Merchant Taylors School and Caius College, Cambridge, whence he proceeded to St. George's Hospital for his medical education. On qualification in 1904 as M.R.C.S., L.R.C.P. Lond., he went into practice in the neighbourhood of Weybridge where he passed the rest of his life and was highly esteemed both as a practitioner and a social leader. He was with the R.A.M.C. throughout the war, being for most of the time attached to the 16th General Hospital. At the conclusion of hostilities he served on many pension boards. He ceased to practice after the war. He was a particularly good comedy actor and appeared regularly in the Weybridge Amateur Dramatic Club shows, while he was an all-round proficient in ball games. He leaves a widow, a married daughter, and five sons.

THE LATE MR. J. R. FORD

WE regret to learn of the death of Mr. J. R. Ford, the artist of pathological subjects, at the premature age of 59. Prof. E. H. Kettle, Prof. J. McIntosh, and Dr. J. A. Murray are co-signatories of the following testimonial to the high quality, beauty, and accuracy of his work.

"Pathologists in particular and others interested in medical scientific publications will learn with regret of the death of Mr. J. R. Ford. With his partner, Mr. W. Thornton Sheills, of the firm of Sheills and Ford, he set the standard for accurate and beautiful illustration in the London medical world for many years. The lithographic plates to Griffith's volume in the reports of the Tuberculosis Commission were drawn on stone from Ford's coloured microscopic drawings and are a monument to his fidelity and delicacy of touch. The Scientific Reports of the Imperial Cancer Research Fund contain some of his finest and most distinctive work, characterised by masterly gradation of tone combined with accurate detail. His loyalty and discretion, combined with a shrewd judgment of men, made him welcome in all the laboratories in which he worked. Many of us feel that in Ford we have lost a friend and collaborator, rather than merely a brilliant technical assistant."

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Bills Advanced

IN the House of Lords on March 13th the Shops Bill passed through Committee with the same minor Government amendments and was reported to the House. In the House of Commons on the same day the Rural Water Supplies Bill was read the third time. The Indian Pay (Temporary Abatements) Bill also passed through its remaining stages. It was read a first time in the House of Lords on March 14th.

The Budget

In the House of Commons on March 15th Mr. MACDONALD, Prime Minister, announced that the Chancellor of the Exchequer would open his Budget on Tuesday, April 17th. It was proposed that the House should rise for the Easter recess on Thursday, March 29th, and resume on Monday, April 9th.

Medical Services in the Army

On March 15th, in the House of Commons, Mr. DUFF COOPER, Financial Secretary to the War Office, in moving that the House go into Committee of Supply on the Army Estimates for 1934, said that the health figures in the Army were better than they have ever been. That applied not only to the Army in England, but to the Army in India and abroad. It was quite wrong and misleading to suggest that young men entering the Army and going to India put themselves into any peril in the way of health. On the contrary, the health of the men in the Army was a great deal better than the health of the general population outside the Army.

RECRUITMENT

Sir FRANCIS FREMANTLE said he wanted to deal with one point, the hardy annual which to his mind was one of the vital points of the defence forces, and especially the Army—the medical services. There was a special reason for raising this question this year. Year after year successive Ministers have met the situation in the same way, either by saying nothing about it, or by admitting the difficulty, but holding up their hands and saying it was perfectly impossible because medical men would not come forward and serve and therefore they must get on without them. This time they had the report of the excellent committee set up under the chairmanship of Sir Warren Fisher, the year before last, by the then Secretary of State for War. That committee reported last summer. The report dealt with the medical services of the three fighting forces. As far as the Army Medical Services were concerned the committee came to a definite conclusion, which in general was a correct one, accepted by the medical profession, including the British Medical Association, as to the reason for the continued lack of recruits in the medical services. The general upshot of the committee's recommendations was that the services had to meet the competition of ordinary civil life in appealing to the young medical men whom they wanted to attract. They must meet the particular points which influenced these young men at the age of 26 or thereabouts when they were considering their future career. One point obviously concerned the temporal, material prospects of the services, which, while they had hitherto been good enough, were becoming increasingly burdensome in proportion to the medical man's commitments when he was married and had a family, and still more when he

retired. In that way the medical services of the Army had never been able properly to rival the various opportunities offered in civil life.

BETTER PROSPECTS

Another point was that of improved professional services. There was no profession which, after a long course of training, sent out men with a stronger desire to devote themselves to their work than the medical profession, but the committee suggested a certain improvement in this respect, and said that it was possible, without any total increase in expenditure, but by an adjustment, to get better prospects for the individuals who entered the medical services by upgrading so that they might obtain promotion at an earlier age and by continuing longer in the services be able to make a career. On the other hand, there should be a short-term service so that those who entered for five years might retire with a grant of £1000 to enter into civil life and practice. There would then be a great opportunity for getting a sufficient number of recruits for the medical service. The decision of the Government on this subject had not yet been announced. The British Medical Association, which had had the matter in hand all the way through on behalf of the profession, wrote to the three departments concerned, and the other day they received a reply from the War Office that the Army Council had found it necessary to discuss the recommendations of the Fisher Committee with the India Office, who had to communicate with the Government of India. The War Office added:—

"I am to ask you to convey to your Council the assurance that the question is being actively pursued, and a reply will be sent at the earliest opportunity."

He asked whether the Financial Secretary to the War Office could give any indication when these matters were to be dealt with. Meanwhile the difficulty continued. It was not to be treated lightly. Again and again this country had found itself landed in a war in which the neglect of the medical services had come home to roost in the actual torture and suffering of the men who in the war were deprived of proper services.

"HEADING FOR DISASTER"

This was not only a matter of professional concern. If the men in these services were to bring their talent to the point required it meant a very special training, and they could not improvise it on the spur of the moment. They would always get men from civil practice in time of war, but that was the least that was required by an army in the field. There were preventive services which could not be improvised and conditions which were not met with in civil practice. There were the liaison services and hospital services, and yet in the 15 years since the end of the Great War they had gone on with a diminishing number of medical recruits and a number of the elderly officers were assisted by civilians who would not be able to proceed to the higher ranks. Consequently, the whole service was disorganised and they were heading for a disaster such as they experienced at the beginning of the South African War. He hoped that was not going to be repeated, but it was essential that the War Office should take the matter up. Not only the medical services, but the British Dental Association were concerned. The dental and nursing services were equally essential to the service as a whole. According to the Fisher report the position was not so serious in regard to those two ancillary services. The British Dental Association had a definite scheme. He hoped that the War Office would make up its mind with the other departments concerned during next year and that there would be a move forward to get a compaign for the recruitment of the men required for the medical services.

THE WARREN FISHER REPORT

Mr. DUFF COOPER said he hoped that the Warren Fisher report on the Royal Army Medical Corps would be adopted and would go as far as Sir F. Fremantle believed it would towards solving that particular difficulty. He hoped that the consultations on the subject with the Government of India would not take very much longer, and he sincerely hoped, as did everyone at the War Office, that the difficulties which had arisen in regard to the Indian position would not prove insuperable, and that the report would be adopted and help the service very considerably in future.

Sir F. FREMANTLE: Is the hon. gentleman working in that respect with the heads of the Admiralty and the Air Force, as the report dealt with the three services on the same lines?

Mr. DUFF COOPER: Certainly it dealt with the three services, but at present it is merely from the point of view of the Army in India that it is being held up. The three services at home are all equally anxious that it should be adopted.

Contraceptives Bill

In the House of Lords on March 20th Lord DAWSON moved the third reading of the Contraceptives Bill. He said that it could not be too plainly stated that this measure did not interfere with the sale of contraceptives inside any shop to any person of any age. It did not prevent them being exhibited in shop windows, nor did it prevent notices being exhibited that such sale took place within. What the Bill did was to control the public exhibition of drawings and diagrams and the sale of contraceptives in streets and other public places by means of hawking and automatic machines, these being regarded as an offence against public manners. He must once more express his conviction that the best way to exorcise evil was to support the good, and that the best way of dealing with the problem of contraception was to remove the atmosphere of falsity which surrounded it. If a ballot of people of marriageable age under the age of 40 were taken throughout the country he thought that three-quarters or seven-eighths of them would desire to be in a position to regulate the numbers and spacing of their families. How otherwise could they explain the steady fall in the birth-rate and the increasing intervals between children? And the classes the size of whose families had notably diminished included the great professions, with the clergy at the top of the list. The new housing schemes imposed restrictions upon the number of occupants in blocks of flats, and with the modern standards of comfort and modern views of overcrowding they had implicit expectation of almost universal contraception. There was a growing feeling among the masses, however, that knowledge available to the rich was being withheld from the poor. He appealed to the Ministry of Health to permit a wider discretion to the local authorities so that birth-control instruction, which the authorities were permitted to give, might be extended to all married women. That would direct the movement into regular channels and save newly married women medically unfit for pregnancy from endangering their lives. After the generous reception which their Lordships had given to this Bill he hoped that the Government would look benevolently on the measure.

The Bishop of LONDON said that the Bill was a very restricted measure, and he had received evidence that day which showed some of the mischief which it was designed to prevent. Three shops had been investigated. One shop in London was mainly patronised by unmarried men. Another shop in a Midland town had a slot machine outside from which contraceptives were sold for a shilling and even for sixpence. In a barber's shop in a little country town contraceptives were displayed in the windows. These facts showed that those who thoroughly disapproved of contraceptives could vote for this Bill just as Lord Dawson and his friends could also vote for it. He (the Bishop) hoped that the Government would see their way to assist the passage of the Bill.

The Bill was read the third time and passed.

HOUSE OF COMMONS

WEDNESDAY, MARCH 14TH

Housing Bill and Evils of Overcrowding

Sir G. ELLIS asked the Minister of Health whether in the Housing Measure announced in the King's Speech provision would be made for dealing with the evils of overcrowding, in addition to measures to promote the reconditioning of unfit houses dealt with in the Moyne Report; and, if so, whether he could make any statement as to the nature of the intended provisions.—Sir HILTON YOUNG replied: It is proposed that the measure shall include provisions for combating the evils of overcrowding, and that assistance from public funds shall be made available for the purpose, subject to certain conditions. These provisions will be in addition to provisions dealing with reconditioning. It would not, I think, be of advantage that details of the nature of the provisions in question should be stated before the introduction of the Bill.

THURSDAY, MARCH 15TH

Consumption of Milk

Mr. HERBERT WILLIAMS asked the Minister of Agriculture the consumption of milk and milk products in terms of liquid milk in 1933 and 1929 respectively; and what percentage was produced in the United Kingdom in each year respectively.—Mr. ELLIOT replied: It is only possible to give United Kingdom figures for liquid milk on an estimate based on June 4th returns for the respective years of numbers of cows, allowing a yield per cow based on the estimate arrived at in the census year 1930–31 (539 gallons per cow per year in England and Wales; 408 gallons per cow per year in Scotland). The following figures, which give supplies of milk and milk products in terms of milk, must therefore be accepted with certain reservations (m.g. = million gallons):—

Home production.	1929. m.g.	1933 (*b*). m.g.
England and Wales (*c*)	1265	1368
Scotland (*c*)	164	171
Northern Ireland (*a*)	90	90
Total United Kingdom	1519	1629

Imports (net).	Milk equivalent. m.g.	m.g.
Butter	1655	2307
Cheese	326	335
Condensed, &c., milk	104	100
Cream	21	17
Milk	1	1
Total	2107	2760
Total home production and imports	3626	4389
Percentage produced in United Kingdom	41·9	37·1

(*a*) The numbers of milch cows in 1929 and 1933 were about equal to the average number in 1924–25, and therefore the estimated figures of the 1924–25 census are adopted.
(*b*) Provisional figures.
(*c*) Based on the estimated yield per cow in the census year 1930–31.

Cheap Milk for Hospitals

Sir ALFRED BEIT asked the Minister of Agriculture whether, in view of his recent announcement with regard to the disposal of the surplus milk-supply, he would make the same concession of cheap milk to hospitals as he proposed to do in the case of schools.—Mr. ELLIOT replied: As indicated in the statement which I made on Feb. 22nd, it will be for the Milk Marketing Boards to frame proposals for expenditure from the milk publicity fund. The approved programme is required to contain, inter alia, provision for the supply of milk to schools at reduced rates, so that it will be open to the Boards to consider other suggestions such as that put forward by my hon. friend.

Hospitals and Road Accidents

Mr. LECKIE asked the Minister of Transport whether, in view of the financial strain upon voluntary hospitals caused by treating persons injured by motor accidents on the highways, he would introduce a short Bill compelling insurance companies which covered third-party risks to pay adequate remuneration to the hospitals for their services in these cases.—Lieut.-Colonel HEADLAM replied: The Road and Rail Traffic Act, which has just come into operation, amended the provisions of the Road Traffic Act of 1930 in regard to the payments to hospitals, and it would, I think, be premature to consider further amending legislation now.

Workmen's Compensation

Mr. HUTCHISON asked the Home Secretary if he would consider introducing legislation to establish, in connexion with workmen's compensation, a schedule of payments in respect of the loss of specific limbs as was the case in connexion with war and disability pensions.—Sir J. GILMOUR replied: This suggestion merits careful examination and had already been noted for consideration when the time comes for a general review of the working of the Acts. I can make no promise at present as to legislation, but my hon. friend may rest assured that the matter will not be lost sight of.

Regional Water Organisation

Mr. CHORLTON asked the Minister of Health if he had now been able to set up the further committees for regional areas in order to completely cover the whole country; and, if not, when he would be able to announce this piece of organisation of water-supply.—Sir HILTON YOUNG replied: Measures have been taken for the appointment at an early date of two additional regional committees covering large areas. The subcommittee of the advisory committee on water is actively engaged in considering what further regions are suitable for the formation of committees.

MONDAY, MARCH 19TH

Road Accidents: Weekly Statements

Sir WILLIAM DAVISON asked the Minister of Transport whether, in view of the numbers of road accidents daily occurring, he would arrange for a weekly statement to be made in the House of Commons as to the total number of persons killed and injured on the roads during the preceding week, with a view to impressing the seriousness of this matter upon the public and the need for care and consideration on the part of all road users.—Lieut-Colonel HEADLAM (Parliamentary Secretary to the Ministry of Transport) replied: Arrangements have already been made with my right hon. friends the Secretaries of State for the Home Department and for Scotland for the number of persons killed and injured on the roads to be reported weekly for a period beginning at Easter, in order that they may be available for publication in connexion with the coming campaign for the reduction of road accidents.

TUESDAY, MARCH 20TH

Maternity Services in Scottish Highlands

Mr. T. B. W. RAMSAY asked the Secretary of State for Scotland if he was aware that the wife of James McLennan, Isle of Scarp, who was delivered of a baby by an untrained midwife at Scarp on Jan. 13th, was conveyed over the island, the sea, and the uncompleted Hushinish-road on a stretcher to a motor-car for transport to Tarbet, Harris, 18 miles away, on Jan. 14th; that ultimately she was conveyed by car to Lewis Hospital, Stornoway, where she was delivered of a second baby at 9 P.M. on Jan. 15th; and, seeing that the people of Scarp had repeatedly asked for a trained nurse, pier, and road transport facilities, what action he proposed to take in the matter.—Mr. SKELTON (Under-Secretary of State for Scotland) replied: I understand that the facts of the case are generally as stated. I am informed that some time before the birth the doctor visited Mrs. MacLennan and strongly urged her to go to Tarbert for her confinement. He again saw her a few days before the birth and repeated this advice. Neither the doctor nor the trained nurse was summoned until after the first child was born. Within two hours of receiving the telephone message asking for assistance they

reached the island and, under the doctor's personal supervision, the patient was removed to the hospital, where she was successfully delivered of the second child. As regards the last part of the question, a doctor and nurse are available in Tarbert, and the installation of a telephone between Tarbert and Hushinish has reduced the difficulty of summoning them to Scarp to a minimum. The Department of Health are satisfied that these arrangements are adequate. The provision of improved transport facilities is a matter in the first instance for the County Council of Inverness. Any application which that body may make for assistance from State funds for that purpose will be carefully considered by the Departments concerned.

Mr. RAMSAY asked if Mr. SKELTON was aware that the doctor who gave the information mentioned in the question also stated that if a district nurse was given to Scarp the island would be very lucky indeed compared with other islands. Was the hon. gentleman aware that many women in the Western Islands viewed with agonising dread the approaching pangs of childbirth on account of their isolation, of the difficulties of transport, and the inadequacy and uncertainty of medical and surgical facilities ?

Mr. SKELTON: I think if other women in similar circumstances would take the advice proffered to Mrs. McLennan and go to a proper home in time, many of the difficulties incidental to life on scattered islands would be removed. (Cheers.)

Material for Medicinal Preparations

Mr. JANNER asked the Secretary to the Treasury whether he was aware that under the Additional Import Duties (No. 5) Order, 1932, customs duties were now levied on dried foliage and similar products which were the material for the production of medicinal preparations, whereas under the Horticultural Products (Emergency Customs Duties), which the above order replaced, such duties were not levied, and that application was made to the Import Duties Advisory Committee on Dec. 14th, 1933, for an amending order; and whether, as trade in these products was almost at a standstill, he would press for an early decision in this matter.—Captain A. U. M. HUDSON (Lord of the Treasury) replied: The Additional Import Duties (No. 8) Order, 1934, which was laid on the Table yesterday, provides for the removal of the additional duty on dried foliage, &c., of the kinds used solely for the manufacture of drugs or medicines.

Small-pox in Blackburn

Mr. GROVES asked the Minister of Health how many cases of small-pox had been notified in Blackburn; what were the ages and vaccinal condition of the patients; and how many of the cases had proved fatal.—Sir HILTON YOUNG replied: Twenty-five cases of small-pox have been notified in the recent outbreak at Blackburn. Of these, 11 were unvaccinated: their ages were one month, and 4½, 7, 8, 16, 19, 24, 25, 27, 30, and 44 years respectively. Twelve had been vaccinated in infancy only; their ages were 22, 31, 33, 41, 43, 49, 55, 56, 59, 61, 62, and 64 years respectively. Two, both 38 years of age, stated that they had been revaccinated in 1917 and 1929 respectively; the former showed evidence of revaccination, but the latter did not. There were four deaths, three of unvaccinated persons aged 7, 8, and 24 years respectively, and the other of a man aged 62 who had been vaccinated in infancy only.

MEDICAL NEWS

University of Oxford

Felix Warden Brown, B.M., has been elected to a Radcliffe travelling fellowship.

Gastro-enterological Congress

The first international congress of gastro-enterology will be held in Brussels from August 8th to 20th, 1935, under the presidency of Dr. J. Schoemaker (The Hague). Prof. O. Weill, Dr. L. Mayer, Dr. E. Henrard, and Prof. A. Dustin (all of Brussels) will be presidents of the sections of medicine, surgery, radiology, and pathology respectively. The two main subjects for discussion will be gastritis, in which Dr. A. F. Hurst will speak for the section of medicine, and ulcerative colitis (non-amœbic). The secretary of the congress is Dr. Georges Brohée, 64, rue de la Concorde, Brussels.

Irish Medical Schools and Graduates' Association

The annual dinner, held at Claridge's on St. Patrick's Day, coincided with the Oxford and Cambridge boat-race and other distracting events. The occasion was worthy of the day, and Colonel G. A. Moore, who occupied the chair, had no need to apply the adage printed at the head of the toast list "Brevity is the soul of wit." After the loyal toasts had been honoured the Arnott memorial medal, awarded shortly before his death to Mr. Canny Ryall, was handed by Mr. McKim McCullagh to his widow, who spoke of the bravery and personality required to found a hospital. The toast of his memory was then honoured in silence. Sir William Wheeler proposed "The Guests," remarking on the value of a gathering which brought together all shades of political opinion, its impartiality being shown, he remarked, by the universal wearing of white shirts. He coupled the toast with the name of the Countess of Iveagh, the first lady to be the principal guest of this association dinner. She and her husband were, he said, engaged from morning to night in what Tim Healy called "invisible mending," whether it was slums or politics. Lady Iveagh replied with feeling. Lieut.-General J. A. Hartigan, director-general of Army Medical Services, then proposed "The Association." The Irish schools, he said, had always been most loyal friends of the Services, and he hoped any hospital treasurers present were feeling some mitigation of their anxiety as a result of the most recent Irish industry. Colonel Moore replied picturing the pleasure of St. Patrick in looking down on so happy a company.

University of Dublin

The Mallet Purser lectures at Trinity College will this year be delivered by Prof. C. Ariëns Kappers, director of the Central Institute for Brain Research, Amsterdam. His subject will be the evolution of the cerebral cortex.

National University of Ireland

The senate has awarded the prize for historical research to Mr. Richard Francis Hayes, L.R.C.P. Irel., for his published work, Ireland and Irishmen in the French Revolution. Dr. Hayes is dispensary medical officer in the Ballsbridge district, Dublin.

Central London Throat, Nose, and Ear Hospital

An intensive course in laryngology, rhinology, and otology will be held at this hospital, Gray's Inn-road, London, W.C.1, from April 16th to May 12th. It will include classes in anatomy, physiology, operative surgery, peroral endoscopy, and pathology and bacteriology. Sessions will occupy most of each day. The programme may be had from the secretary-superintendent.

Tomarkin Foundation

The sixth international post-graduate course of this foundation will be held at St. Moritz (Grisons-Switzerland) from August 5th–18th. Among the subjects which will be considered are heart diseases, diseases of children, balneology, nutrition, gastro-enteric diseases, and social medicine. Those who would like further particulars should apply to the secretary of the foundation at its new address: Via Marco Minghetti 17, Rome.

Epsom College Royal Medical Foundation

At their meetings in February last the conjoint committee and the council elected the following to pensions as from April 1st: Dr. Hugh Alston, Dr. John Good, Mrs. Sophia Blott, and Mrs. May Walker, ordinary and Dr. Strong pensions of £40 a year; Dr. Asher Lyons Altman a France pension of £42 a year; Miss Margaret A. C. Keene a Cheyne annuity of £40 a year; Miss Margaret A. R. Goodinge a Henry Duncalfe annuity of £30 a year; and Miss Maud Dawson an S. H. Tait annuity of £16 16s. a year. Mrs. Lydia M. Braidwood and Mrs. Eunice C. Nelson, the senior pensioners on the list, were each awarded an extra Da Silva pension of £20 a year.

Isabel Shoolbred Rowat was awarded a St. Anne's scholarship of £120 a year.

Influenza at Public Schools

Rugby School broke up on Monday on account of influenza. Fifty cases had occurred, described by the headmaster as a slight epidemic of a kind of influenza, and acting on advice the Easter break was being anticipated as a precautionary measure. Tonbridge School is to break up on March 29th for the same reason; 160 boys are on the sick list, and the sports arranged for the Easter week-end have been postponed.

International Society of Surgery

The next meeting of this society will be held in Cairo from Dec. 28th to 31st, 1935, under the presidency of Prof. A. von Eiselsberg (Vienna). The principal subjects for discussion will be the surgery of the parathyroids, the surgery of the lumbar sympathetic, the surgery of the colon (cancer excepted), and the surgical complications of bilharziasis. Prof. Archibald Young is one of the openers of the second discussion and Prof. G. Grey Turner of the third. The secretary-general for the meeting is Dr. L. Mayer, 72, rue de la Loi, Brussels, and the British delegate is Prof. Grey Turner, The Hawthorns, Osborne-road, Newcastle-upon-Tyne, 2.

Birmingham Women's Hospitals

At the two institutions of the Birmingham and Midland Hospitals for Women there were last year 6147 in-patients and home patients and 6154 new out-patients; operations numbered 2600. The ordinary income exceeded £40,000, which left an adverse balance of £1639. Over 700 of the in-patients were sent to the convalescent homes at Sparkhite and Cleeve Prior. The maternity hospital received 1580 patients, most of them, as usual, abnormal cases. The report emphasises the value of the convalescent homes, and remarks that "those patients who were fit to be taken to Cleeve Prior showed its almost miraculous effect after being only a few days there."

Brighton Hospitals

The report presented at the annual meeting of the Royal Sussex County Hospital showed a record number of occupied beds for 1933, the daily total being 231, as against 219 in 1932, and during the year 25 beds had been added. In-patients numbered 3820, and of these 40 per cent. were emergency cases and accidents. There was always a waiting-list of about 200. The number of electro-therapeutic treatments given was 6892, 540 more than in the previous year. Out-patient attendances had decreased by about 10,000, largely because of the attempt to make out-patient clinics more purely consultative, and because of the extension of the list of drugs supplied under the National Health Insurance Acts. As regards the financial position ordinary income fell short of maintenance expenditure by £765, and this deficit had been met by legacies. The average cost of each in-patient had been reduced by a few pence; but in the case of the out-patients there had been a slight increase. Rates had taken £865. The crying need of the hospital, according to Dr. Donald Hall, who is just completing his thirtieth year of continued service for the institution, was for beds and more beds.—The Royal Alexandra Hospital for Sick Children had a deficit of £1590, which had been met by drawing upon legacies which had amounted to £3369 during the year. There was still an overdraft at the bank of over £1000. In-patients numbered 1158, and out-patients 2200.—The Sussex Maternity Hospital during 1933 had purchased premises adjoining the institution, bringing the total number of beds up to 40. Legacies had been used to make up a deficiency of £1467. The in-patients numbered 745, and included 119 in the private wards. There had been 5282 attendances at the ante-natal clinic. An electrical sterilising plant had been installed.—The Sussex Eye Hospital will remove from Queen's-road to the new building in Eastern-road, where the foundation-stone was laid during 1933. An appeal had been launched to raise £9000 by Oct. 7th, when the new hospital is to be opened. The deficit on the year's working was £595, which was made good by legacies.—The Sussex Throat and Ear Hospital accounts showed a deficit of £455.—Hove Hospital had a deficit of £511, and the 56,000 townspeople of Hove subscribed only £638 last year. Plans for the rebuilding and extension of the hospital to meet the demands upon it are to be put n hand at once.

A Visit to a Wild Flower Sanctuary

The Green Cross Society, one object of which is the growth and protection of our best wild flowers, is planning a visit to Norway for the study of wild flowers in an area in which flowers are under the guardianship of the Government. The party is to leave Newcastle-upon-Tyne on June 23rd, and travel by Bergen to the Highland Hotel at Bygdin, which has been chosen as the head-quarters for excursions, under the guidance of a botanical expert from Oslo. The inclusive cost of the round trip lasting ten days will be twenty guineas. Mrs. Millicent H. Morrison, hon. secretary of the society, expresses a hope that the visit may inspire some of the party on their return to initiate wild flower sanctuaries in this country. Her address is 47, Victoria-street, London, S.W.1.

Western Infirmary, Glasgow

Last year 12,118 in-patients and 46,408 out-patients were treated. The average daily cost per patient was 7*s*. 4*d*. In addition to the daily average of 602 patients in the wards, there was a resident staff of 416, and the total number on the staff was 584. Applications were received from 711 candidates desiring admission as probationers to the training school for nurses, and there were 94 vacancies. While the ordinary income of £68,487 fell short of meeting the ordinary expenditure by £13,941, the total receipts of £95,024, including free legacies, exceeded the total expenditure of £85,992 by £9032. As the original buildings of the infirmary are 59 years old, the managers are now faced with heavy expenditure in connexion with renewals and structural alterations. Colonel D. J. Mackintosh last year completed 40 years' service as medical superintendent, and it has been decided to name one of the wards after him.

The London Hospital Quinquennial Appeal

The income for 1933 was £277,510, compared with £221,643 in 1932, the increase being accounted for by the result of the quinquennial appeal. The expenditure was £239,731, an increase of only £887, although it included over £6000 for the exceptional expenditure upon the appeal. Economy had been so stringent that the expenditure was £27,000 less than in 1930. The appeal produced £80,000. The committee regard the result as "somewhat disappointing." They report that the capacity of the out-patient department is taxed to the uttermost by the recent increase of special departments and special clinics, such as the cardiac department and the defective speech clinic. It was stated that the following expenditure is necessary for urgent extensions: £10,000 to complete and equip the new massage and electrical department; £10,000 for paying wards; £25,000 for a hostel for domestic staff; £10,000 extension of nurses' homes.

Clerical, Medical, and General Life Assurance Society

In a report presented to the annual general meeting held at 15, St. James's-square on March 15th, it was noted that 2571 new assurances had been granted for a total sum of a little over two million pounds, the number of policies issued being without record. The total premium income rose by £110,020 to £921,553, the exceptional increase being due in the main to the volume of single premiums received. Claims made on the death of 283 persons assured under 349 policies amounted to £359,826, an amount more than £150,000 below the total recorded last year. The character of the claims was favourable, and a record mortality profit resulted. The society has revised its rates of premium for new assurances, to give effect to improving mortality and to the changed monetary conditions since the war loan conversion of 1932. While the lower rates of interest to be earned on invested funds require in many instances a higher rate of premium, the improvement in mortality has enabled reductions to be made in the case of whole-life and short-term assurances. A new form of policy is enabling men with dependents to secure greater life-assurance cover than was possible before. Lord Moynihan has been elected to fill the vacancy on the directorate left by the death of Sir George Makins; and Mr. A. D. Besant, a former general manager of the society, has become a director. The next valuation will be made at the end of 1935, when profits will be divided.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, March 26th.
Odontology. 8 P.M. Clinical Meeting. Cases: Miss E. M. Bennett: 1. Complete Absence of Enamel. Mr. St. J. Steadman: 2. Carcinoma of the Maxilla; Lost Tissues replaced by Walkerite Denture. Mr. A. L. Packham: 3. Epithelioma of the Maxilla. Mr. G. T. Hankey: 4. Osteitis Fibrosa of the Maxilla. 5. Receded Mandibular First Molar. Mr. Matthews: 6. Orthodontic Cases. Mr. F. Coleman: 7. Dental Cysts.
TUESDAY.
Medicine. 5 P.M. Discussion on Recent Advances in Pathology and Treatment of Lymphadenoma, to be opened by Dr. A. E. Gow, Dr. M. H. Gordon, and Dr. W. M. Levitt.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, March 26th.—8.30 P.M., Discussion on Functional Disorders of the Bowel, to be introduced by Dr. T. L. Hardy and Dr. Thomas Hunt.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.
WEDNESDAY, March 28th.—4.30 P.M., Clinical Cases.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
MONDAY, March 26th.—5 P.M., Mr. C. E. Shattock: Specimens illustrating Diseases of the Large Intestine.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.
THURSDAY, March 29th.—9 P.M., Mr. John Everidge: Urinary Calculus.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, March 26th, to SATURDAY, March 31st.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Lecture-demonstration on Pupura, Tues., at 2.30 P.M., by Dr. A. E. Clark-Kennedy.—PANEL OF TEACHERS. Individual clinics in various branches of medicine and surgery are available daily by arrangement with the Fellowship of Medicine. Courses of instruction arranged by the Fellowship of Medicine are open only to Members and Associates.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, March 27th.—4.15 P.M., Mr. H. H. Rayner: Hæmaturia.

ANCOATS HOSPITAL, Manchester.
THURSDAY, March 29th.—4.15 P.M., Dr. G. J. Langley: Heart Failure.

UNIVERSITY OF BIRMINGHAM POST-GRADUATE COURSE.
TUESDAY, March 27th.—3.30 P.M. (at the General Hospital), Dr. Douglas Heath: Demonstration of cases of skin disease.

GLASGOW POST-GRADUATE LECTURES.
WEDNESDAY, March 28th.—4.15 P.M. (at the Royal Samaritan Hospital for Women), Dr. J. Gardner: Gynæcological Cases.

Appointments

DUNSCOMBE, N., M.B. Camb., D.P.H., has been appointed Medical Officer of Health for Finsbury.
GOULD, R. BLAIR, M.B. Sheff., Honorary Assistant Anæsthetist to the Royal Dental Hospital.
LOBBAN, G. M. D., M.B. Leeds, D.P.H., Medical Officer of Health for Bury.
MCMANUS, E., M.B. N.U.I., Medical Officer, Roscommon Dispensary District.
THOMAS, C. J., L.R.C.P. Lond., D.P.H., Medical Superintendent and Director of Wakefield Mental Hospital, W.R.
WALKER, G. F., M.D. Leeds, M.R.C.P. Lond., Honorary Physician to the Darlington Memorial Hospital.
Certifying Surgeons under the Factory and Workshop Acts: COWIE, C. A., M.B. Aberd. (Polesworth, Warwick); HENDRY, C. V., M.B. Edin. (Cupar, Fifeshire); MCCARTER, J. O., L.R.C.P. Lond. (Whitchurch, Shropshire); and PURVES, K. M., M.B. Edin. (Chagford, Devon).

Vacancies

For further information refer to the advertisement columns

Albany Deptford Babies' Hospital, 25, Breakspears-road, S.E.—H.P.
Alton, Hants, Lord Mayor Treloar Cripples' Hospital and College. Third Asst. Res. M.O. At rate of £150.
Altrincham General Hospital.—Jun. H.S. At rate of £120.
Belgrave Hospital for Children, Clapham-road, S.W.—H.P. and H.S. Each at rate of £100.
Birkenhead General Hospital.—Res. Second H.S. and Res. Cas. O. Each £100.
Birmingham, Selly Oak Hospital.—Res. Ear, Nose and Throat Surgeon. £700.
Birmingham University, Faculty of Medicine.—Lecturer in Pathology. £400.
Bristol Royal Infirmary.—Asst. to the Cancer Dept. £300.
Burnley, Municipal General Hospital.—Jun. Res. M.O. £150.
Cardiff Isolation Hospital.—Asst. Res. M.O. £250.
Carshalton, Queen Mary's Hospital for Children.—Asst. M.O. £350.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Second Asst. in Out-patient Dept.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Derby, Derbyshire Royal Infirmary.—H.S., Ophth. H.S. Also Cas. O. Each £150.
Dudley, Guest Hospital.—Second H.S. £170.
Ealing, King Edward Memorial Hospital.—Jun. Res. M.O. £150.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Second Asst. Res. M.O., and H.P. At rate of £150 and £50 respectively.
Hospital for Epilepsy and Paralysis, 4, Maida Vale, W.—Res. M.O., and H.P. At rate of £150 and £100 respectively.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. M.O. Country Branch Hospital. £250.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W. Res. H.S. At rate of £75.
Indian Medical Service.—Commissions.
Jerusalem, St. John Ophthalmic Hospital.—H.S. and Asst. H.S. £350 and £200 respectively.
Kidderminster and District General Hospital.—H.S. £150.
Lancaster County Mental Hospital.—Temp. Asst. M.O. 7 gns. per week.
Leeds Maternity Hospital, Hyde-terrace.—Sen. and Jun. H.S's. At rate of £52 and £26 respectively. Also Hon. Obstet. Surg.
Leicester Royal Infirmary.—Jun. Cas. O. At rate of £100.
Liverpool University.—Chair of Medicine.
London University.—Chair of Medicine, Surgery, and Obstetrics. Each £2500. Also Chair of Pathology. £2000.
Manchester, Ancoats Hospital.—Res. M.O. At rate of £150.
Manchester, Royal Children's Hospital, Pendlebury.—Res. Surg. O. At rate of £125.
Manchester, St. Mary's Hospital.—Three H.S.'s to Spec. Depts. Each at rate of £50.
Miller General Hospital, Greenwich-road, S.E.—Hon. Asst. Radiologist.
National Hospital for Diseases of the Heart, Westmoreland-street, W.—Res. M.O. and Out-patient O. At rate of £150 and £125 respectively.
Norwood Hospital for Children, Elder-road, S.E.—Asst. M.O. £250.
Nottingham General Hospital.—Second Res. Cas. O. At rate of £200.
Oldham Royal Infirmary.—H.S. At rate of £175.
Paddington Green Children's Hospital, W.—H.P. and H.S. Each at rate of £150.
Paisley, Johnstone Infectious Diseases Hospital.—Res. M.O. £350.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Hon. Ear, Throat, and Nose Surgeon.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Rotherham Hospital.—Cas. H.S. £150.
Royal Dental Hospital of London.—Part-time House Anæsthetist. 10s. 6d. per session.
Royal Free Hospital, Gray's Inn-road, W.C.—Res. Cas. O. At rate of £150.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Gynæcological Reg.
St. Mary's Hospital, W.—Second Hon. Obstet. Surg.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. and Asst. Res. M.O.'s. At rate of £175 and £120 respectively. Also Clin. Assts. to Med. Out-patient Depts.
St. Peter's Hospital, Vallance-road, Whitechapel, E.—Asst. M.O. £350.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.
Shrewsbury, Royal Salop Infirmary.—Res. H.P. At rate of £160.
Southern Rhodesia Medical Service.—Government M.O. £600.
Stafford, Staffordshire County Council.—Venereal Diseases Officer £750.
Todmorden Borough.—M.O.H. and School M.O. £800.
Wakefield, West Riding of Yorkshire County Council.—School Medical Inspector. £500.
West Bromwich and District General Hospital.—Cas. H.S. and H.P. Each at rate of £200.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Surg. Reg.
Worthing Hospital.—Hon. Asst. Surgeon to Ophthalmic Dept.
The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Corris (Merioneth)

Births, Marriages, and Deaths

BIRTHS

BOWDEN.—On March 14th, at Minafon, Bettws-y-Coed, the wife of Dr. T. R. Bowden, of a daughter.
CARDELL.—On March 17th, at Weymouth-street, W., the wife of J. D. Magor Cardell, F.R.C.S., of a daughter.
HARDING.—On March 12th, the wife of Dr. Harold E. Harding, of Endcliffe-avenue, Sheffield, of a son.
LOGAN.—On March 14th, at "Lindi," Horton-road, Gloucester, the wife of Dr. F. C. Logan, of a son.

DEATHS

CUMMING.—On March 17th, at Hereford, Major Herbert Ernest Cumming, C.A.M.C., M.C., M.D., M.R.C.S., L.R.C.P., aged 46.
DYER.—On March 14th, at Longridge-road, Earl's-court, S.W., Sidney Reginald Dyer, M.D., M.R.C.S. Eng., L.R.C.P. Lond., Barrister-at-Law, J.P., Somerset, late H.M. Commissioner of Prisons, aged 73.
KERNOHAN.—On March 16th, at Magdalen-road, Wandsworth Common, David Kernohan, M.D., aged 62.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE HOSPITAL ALMONER

IN his presidential address to the Institute of Hospital Almoners on Wednesday of last week, Sir FARQUHAR BUZZARD expressed a feeling that with the inevitable expansion of hospital social services the preventive aspect of the almoner's work would one day assume a more important rôle, although he was not prepared to forecast on what lines this would develop. Medical science must tend more and more towards its preventive aspects and the knowledge of such advances would reach the poorer classes of the population through the medium of the almoner who really played the part of interpreter and expositor.

AN ELASTIC TRAINING

On the subject of an almoner's training he suggested there might be something to be learnt from the history of the medical curriculum. You have, he said, so far enjoyed the advantage over us, and may continue to do so, of recruiting your ranks by a process of selection and probation. You have also been able, up to the present, to accept only candidates who have completed a general education and who have thus avoided the snare of early specialisation. That is a position which I hope you will hold with dogged determination unless and until you are forced from it by economic considerations. It cannot, in my opinion, be too strongly urged that even after school life is over a girl needs a period of at least a year in which to widen her horizon before entering upon the special preparation for the almoner's certificate. In order to become an efficient social servant some knowledge of all social strata is essential and without it a woman's sense of perspective may be seriously and permanently warped. Such an interval between leaving school and entering upon professional training may be usefully employed in a number of different ways—by travel, by university graduation, or by the study of any subject which has no immediate association with social services. There can be no doubt that all professions would benefit if some such rule were in force, but you are, for the moment at any rate, almost the only one able to make it a universal requirement.

Less than a century ago a medical student began his preparation for his profession by becoming an apprentice for a year or two to a doctor—very often as early as at 15 or 16 years of age. After a year or two of apprenticeship he would join a medical school and turn for a while to the more academic side of his training. With the advance of medical knowledge, with the extraordinary development of the sciences ancillary to medicine, and with the necessity for acquiring some knowledge of chemistry, physics, biology, anatomy, and physiology, the student's path was completely changed and to-day he no longer comes into contact with sick persons until that background of learning has been attained. If, Sir Farquhar went on, you are tempted to add to your training little by little there will come a time when you will find yourself in our position and under compulsion to do something about it. May I suggest that you keep clearly in mind what subjects are essential for every candidate and what subjects are desirable and perhaps necessary to a few. Let the curriculum embrace the essentials and let post-graduate study deal with the remainder. And don't fill every moment of the curriculum with essentials even; allow time for thought, for mental digestion and recreation.

THE CURRICULUM

It would be, he said, outside his province to suggest what studies the almoner's normal curriculum should or should not embrace. But, he added, some of you have been asked or you have asked yourselves: What should an almoner know of anatomy and physiology, of medicine and surgery? If I am doubtful of the value of the time spent by nurses in acquiring a smattering of physiology and anatomy it will not surprise you to know that I deprecate the idea of almoners wasting much of their energies on a similar quest. It is to be hoped, perhaps it may be expected, that the day is not far distant when all girls and boys at school will be taught the elements of biology in such a way as to make them familiar at least with the essential facts of life and with the general structure and functions of their bodies—in other words receive an education worthy of the age in which they live. In the meantime I doubt the wisdom of doing more than encourage your students to gather what they can from suitable books. Set courses in these subjects, such as would be possible in the limited time at their disposal, would, I feel sure, be useless. Still stronger is the argument against any attempt to teach them even the elements of medicine and surgery. What they will need in carrying out medical social service is the ability to understand and interpret the strange language used by doctors and, perhaps still more important, an intimate and sympathetic conception of the principles, ideals, and ethics underlying the practice of medicine. I am not aware, said Sir Farquhar, whether that is provided for in your present scheme, but I believe that one or two lectures, given by a suitable medical man, with that object in view, would prove both interesting and useful.

For those who wish to specialise in the work of mental hospitals medical psychology must be regarded as a post-graduate study of importance requiring perhaps special courses of instruction and special opportunities of gaining experience. In the ordinary almoners' curriculum, however, I would encourage the student to acquire a general acquaintance with the subject by reading, and would help her by advice as to what books she should use for her enlightenment. I might be prepared to supply a list of books, and the names of their authors, which I consider suitable for the purpose. (Fear of rousing indignant criticism prevented him, he added, giving it publicity at the moment.) A student who has taken a course of social psychology and philosophy is well prepared to assimilate the main features of medical psychology when she is brought face to face with them in hospital work.

CERTAINLY A VOCATION

The position of almoner, said Sir Farquhar in conclusion, is a career suitable only for women who are well-educated, physically and mentally sound, and with a genuine urge for social service. For those so equipped it affords work of infinite variety and of great human interest, work which carries with it the charm of initiative, of responsibility, and of visible and tangible results. As in medicine, the student never ceases to be a student, even when she begins to teach, and no day can pass without adding to her stores of knowledge. It was encouraging to learn that the demand for almoners is steadily increasing and that 16 new posts were filled during the year. It would be still more encouraging to learn that the appreciation of almoners is being also shown by increments of salaries. Doubtless this very desirable and very essential change will come and, he added, perhaps you are wise while you are young in refraining from laying down any rigid rules in regard to financial arrangements. It takes a certain amount of time to persuade the community that an innovation in administration is good in itself; it requires a much longer period to establish the fact that it is a sound economic proposition.

ANTI-TUBERCULOSIS WORK IN ITALY

THE anti-tuberculosis work of the Red Cross Society in Italy during and after the war is described in a recent paper by A. Ilvento.[1] In 1915 the provision of sanatorium beds for the whole country did not

[1] Croce Rossa, 1934, ix., 19.

exceed 1000, and these were available only to the well-to-do. Tuberculosis dispensaries were run by some of the larger municipalities and by certain charitable societies, but were little more than diagnostic centres. A small number of open-air schools and homes for children existed, of which very few could afford to remain open all the year round. The incidence of and mortality from pulmonary tuberculosis increased rapidly during the war, and at its conclusion the military authorities were faced with 31,480 cases of the disease. The Red Cross Society opened their first sanatorium in 1916, and within a short time ten others had brought the total number of beds up to 2500. After the war the work was reorganised. All the military tuberculosis hospitals were disbanded except two, which were to serve the civilian population. To these were added in 1923 a third (Cesare Battisti) and a marine hospital for surgical tuberculosis. By the end of this year the society had provided 700 beds for tuberculous patients. Special institutions for the children of tuberculous parents were also started by the society. Dispensaries were opened and, for the first time in Italy, trained nurses were employed for home visiting and follow-up work. Other activities included summer colonies for chronic cases and special schools. A recent Government inquiry showed the number of sanatorium beds available to be 12,000, an advance in which the Red Cross Society may claim an important share.

ŒSOPHAGEAL SURGERY

THE Sauerbruch clinic in Berlin continues the work of Mikulicz on the surgery of the œsophagus, and H. Krauss is able to describe some remarkable cases treated there (Med. Klinik, 1933, xxix., 1543). He can report no recent successful excision of the œsophagus for carcinoma, but several patients have survived the immediate dangers of the operation of invagination of the tumour after transdiaphragmatic dislocation of the stomach, only to perish from some incidental complication. It has been the policy of the clinic always to attempt excision of the tumour with restoration of continuity, and operations after the manner of Torek have not been done.

Mention is made of five cases of œsophagobronchial fistula which were cured by operation. These patients suffer from an associated infection of the lung, and diagnosis is established by the expectoration of milk or other swallowed material. They are apt to undergo treatment for chronic pulmonary suppuration for some time before recognition of the syndrome permits of their surgical cure.

Cardiospasm is dealt with at some length. Operation is undertaken only after prolonged trial of hydrostatic dilatation, and if this fails an œsophagogastrostomy is carried out by the left transpleural route. Four cases are reported in detail in which the syndrome was initiated by an organic lesion in the epiphrenal region, and in all of them excision of the lesion led to a resumption of normal swallowing. The operation was carried out by the left transpleural route after resection of the ninth and tenth ribs, and positive-pressure anæsthesia (Tiegel-Henle) was used.

The first patient was a woman of 54 who had suffered from difficulty in swallowing for many years. Her symptoms had increased in severity until emaciation had become serious. Radiological examination disclosed an epiphrenal diverticulum the size of a fist. This was excised and the defect closed by suture. The phrenic nerve was severed and, as an additional protection for the suture line, a pedicle graft was taken from the diaphragm and sutured over the site of excision. The patient was swallowing a normal diet at the end of 21 days and is now at work.

The second was a boy of 13 years who suffered from cardiospasm complicated by attacks of acute cardiac and respiratory distress. These had been attributed to functional nervous disorder, but the radiological finding of a tumour in the posterior mediastinum suggested a local origin of his attacks, which were possibly due to a reflex disturbance of the vegetative nervous system. At operation a cyst the size of a hazel pear was excised from the anterior wall of the œsophagus some 5 cm. from the cardia. The lumen of the œsophagus was not entered. The histological appearance of this cyst showed it to be an epithelial cyst of congenital origin. The patient was relieved not only from his cardiospasm but from the acute cardiac attacks which had seemed to threaten his life.

The third patient, a woman of 54 years, suffered from a chronic peptic ulcer immediately above the cardia. This was disclosed by radiography after her symptoms of cardiospasm had been treated fruitlessly by various methods of dilatation over a period of three years. A jejunostomy was done, and this resulted in such general improvement as to permit of a thoracotomy some two months later, when œsophagogastrostomy was carried out. This operation was followed by some months of improvement, but a recurrence of her symptoms led to further intervention. The final operation was done in two stages and consisted in excision of the ulcer together with the anastomosis site and restoration of continuity by direct union of the lower end of the œsophagus with the stomach. The patient was relieved of her dysphagia, but some 18 months later died from intestinal obstruction. The specimen of the œsophagus and stomach was obtained and showed a free passage at the site of the anastomosis.

This case is of great significance in the history of the surgery of the œsophagus, because it is the first time that continuity has been restored after transthoracic resection of the organ.

The last case was that of a policeman, some 30 years of age, who had suffered from cardiospasm for three years. Treatment by dilatation had failed to relieve his symptoms. Radiology disclosed a tumour of the posterior œsophageal wall. Thoracotomy was carried out and a tumour the size of a fist and of irregular outline was found in the lower œsophagus. This was excised and in the process the lumen of the œsophagus was entered. The defect was sutured and as a means of precaution an œsophagogastrostomy was carried out. There was complete relief from his symptoms and radiological examination some months later showed that the food followed its normal path to the stomach. There was no stricture at the site of the excision, and no food passed by means of the œsophagogastrostomy.

PAROXYSMAL HYPERTENSION

NOT long ago we quoted J. M. Planteydt's account [1] of a case of paroxysmal hypertension associated with a suprarenal tumour. A similar case has since been reported by M. Labbé and F. Nepveux.[2]

The patient, a man of 41, began in December, 1931, to suffer from attacks of hypertension, occurring at first at irregular intervals but soon developing a regular daily periodicity. During these attacks he suffered from severe substernal distress, a feeling of constriction in the neck, and palpitation, and the face, hands, and feet became white and cold as a result of intense vasoconstriction. A feature of the attacks was the slow pulse-rate, which also became very variable. The case had been diagnosed in Vienna as one of suprarenal tumour, and an operation had been performed on the right side which had revealed a normal gland. The surgeon had not considered it safe to explore the other side at the same time. The patient subsequently went to France, and came under the care of Leriche and Nepveux.

Examination during the attacks—which came on each morning while the patient was dressing, and lasted 1½–3 hours—showed a rise in the systolic blood pressure (e.g., from 200 to 340 mm. Hg), which fell as the attack passed off to below the original level. The diastolic pressure remained constant during the

[1] Nederl. tijdschr. v. geneesk., 1933, lxxvii., 4774; see THE LANCET, 1933, ii., 1382.
[2] Bull. et mém. Soc. méd. hôp. de Paris, March 5th, 1934, p. 337.

attack at 105–110 mm. The blood-sugar rose synchronously with the systolic pressure, and at the height of the attack there was glycosuria. The urine was examined both during and between attacks, and was found to contain albumin and casts, while the blood-urea was slightly raised. When the patient was examined in Vienna the urine showed nothing but a trace of albumin, and it is therefore concluded that renal changes were in process of development as a secondary result of the high blood pressure.

Operation in December, 1933, by Leriche revealed a normal left suprarenal gland, but between the aorta and the vertebral column was felt a tumour as large as a nut, which when removed and examined histologically was found to be a paraganglioma. This may have developed from an aberrant suprarenal gland or from a persistent chromaffin organ. It is suggested that the bradycardia noted during the attacks was due to irritation of the vagus plexus. After the operation the blood pressure gradually fell to 125/95, then became steady at 140/100. There were no more hypertensive crises.

Like other observers, Leriche and Nepveux lay stress on the importance of early operative treatment. The symptoms are so characteristic that in a well-developed case there should be little difficulty in diagnosis. The inefficacy of medical treatment was demonstrated in this case, in which the patient was unwilling to consent to a second operation until medical measures had been tried and found wanting.

MENDELÉEFF AND THE PERIODIC LAW

THE present year sees the centenary of the birth of Dmitri Ivanovitch Mendeléeff, who provided the first clear enunciation of the periodic law. In 1869, before the Russian Chemical Society, he put forward in eight propositions the principles upon which this law is based, and the supreme importance of his observations and deductions was soon recognised. Not only did he demonstrate the periodic recurrence of certain properties in certain groups of the chemical elements, arranged in series of increasing atomic weights with horizontal and vertical sub-classification, but he also questioned, with justification, some of the existing weights and suggested the addition, at gaps in his table, of elements which have subsequently been found.

The difficulty of fractional atomic weights has now been removed by the discovery that many elements are mixtures of isotopes with atomic weights slightly different, according to the electric charge of the atomic nucleus. To quote an appreciation of Mendeléeff's work appearing in *Nature* for Feb. 3rd, the later "investigations on atomic structure showed that the Periodic Law is a consequence of the formation of atoms from protons and electrons . . . The discovery that the position of an element in the table is really conditioned by its atomic number, or the positive charge on the atomic nucleus, gave the Periodic Law a fundamental character, and the theory of atomic disintegration enabled all the newly discovered radioactive elements to find their places in the lower part of the table, in many cases a single place containing several isotopes of the same atomic number."

In addition to his chemical investigations Mendeléeff made contributions to the study of the expansion of liquids and gases in response to heat, and to the application of scientific knowledge to the great Russian industries, especially that of petroleum. His encyclopædia of chemical technology (1863) was practically the first one ever written and published in Russia. He died in 1907.

PUBLIC SCHOOLBOYS IN THE WILDERNESS

LAST August the Public Schools Exploring Society arranged an expedition to northern Finland so as to find out what weight a score of boys, aged 17 to 19, could carry on pack marches without damaging themselves. The idea is that they may later be sent away, with all their food and equipment on their backs, on journeys in Labrador or Newfoundland. In a paper read to the physical section of the Royal Society of Medicine on Feb. 15th, Dr. G. Murray Levick, their medical officer, described how they set out by train from Helsingfors and then took the motor-bus over roads so rough to produce the worst case of "sea-sickness" he had ever met. Travelling by boats across lake and river, they ultimately reached a base camp 20 miles south of the arctic circle. Here the boys had 11-lb. tents of Grenfell cloth and Dr. Levick's film showed them cutting down trees in the forest, making fires, washing clothes from a boat, bathing, and falling into the river from rafts. They were always busy and had enormous appetites, so that at last they talked of hardly anything but food. They were organised in three groups, in order that the best nine might be selected for the long march when they would carry the 46 lb., which comprised food for 12 days, jackets, and sleeping bags. The chosen party did 140 miles in 12 days over very rough country, climbing over boulders and fallen trunks and negotiating hills and marshes. The furthest point was at a reindeer farm, where they got large meals of meat and a day's rest. The food carried was very dry (rye biscuits, cheese, butter, and pemmican). The bilberries found everywhere were made into a squash with oatmeal at night, at the big meal, the other meals being breakfast, and something sketchy about mid-day. The weather was hot by day and at times they sweated profusely; Dr. Levick then became greedy for salt, but the others declined it. One boy had enteritis, but kept on and recovered. They were all as fit as possible after a day of rest, and none showed any cardiac damage.

JUBILEE OF THE WORD "TABLOID"

ON March 14th, 1884, the word "Tabloid," coined by Burroughs Wellcome and Co., successors to Brockedon, to describe compressed medicaments in the form of biconvex discs, was registered as a trade mark. Until 1903 their exclusive right to the word remained unchallenged, and in that year a successful action against "passing off" was taken in the High Court of Justice, as a result of which the word "tabloid" was certified under Section 77a of the Trade Marks Act, 1883–1888. Since then injunctions against infringement have been granted in courts of justice both in the British Empire and the United States of America, and even a foreign pharmacopœia has been required to publish a correction in regard to the misuse of the word in the text.

THE SERVICES

ROYAL ARMY MEDICAL CORPS

Lt.-Col. J. E. M. Boyd retires on retd. pay.

The undermentioned Lts. to be Capts.: J. M. Officer and S. W. Smith.

RESERVE OF OFFICERS

Maj. E. N. Graham, having attained the age limit of liability to recall, ceases to belong to the Res of Off.

TERRITORIAL ARMY

Col. J. M. Gover, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

Lt.-Col. G. H. Stevenson resigns his commn. and retains his rank, with permission to wear the prescribed uniform.

H. E. Blake (late Cadet Serjt., Cambridge Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Maj. G. N. Anderson, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

INDIAN MEDICAL SERVICE

Lt.-Col. A. N. Dickson retires.